Summary Findings of Cross-Sectional Nutrition Survey Northern Nigeria, February 2012

1. INTRODUCTION

Anthropometric and retrospective mortality survey was conducted in eight states of Northern Nigeria from 6th February to 9th March 2012. A cross sectional survey design with two stages of cluster sampling method was used. The survey was conducted in Borno, Jigawa, Kano, Katsina, Kebbi, Sokoto, Yobe and Zamfara states. The main objectives of the survey were to determine the nutritional status of children under-five years and women 15-49 years of age, to assess infant and young child feeding practice and to estimate crude and under-five mortality rates. Overall, 7,186 children under-five and 6,098 women were interviewed from 4,733 households from a total of 239 clusters.

2. RESULTS

2.1. Child Nutritional Status

The anthropometric results of children 6 to 59 months were calculated using WHO 2006 growth reference. Aberrant data which mainly resulted from measurement error were excluded from the analysis. The global acute malnutrition (WHZ and/or bilateral edema) results are presented in figure 1 below.

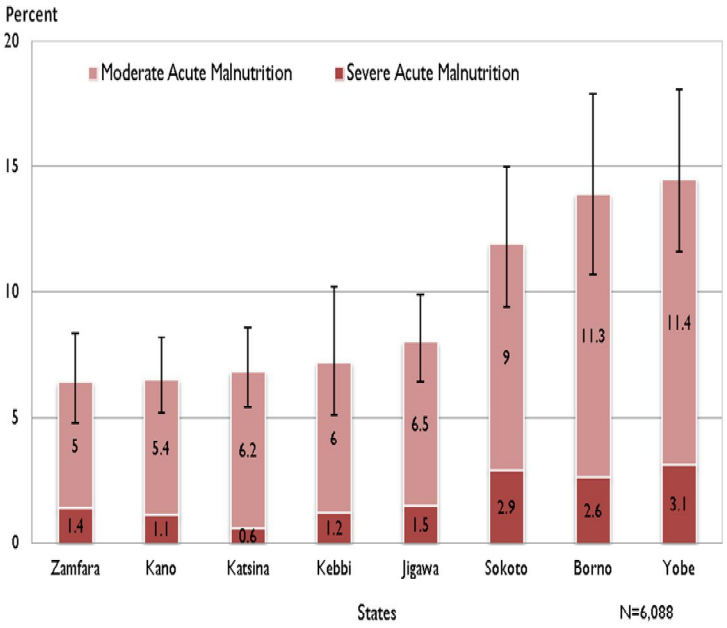

Figure 1: Global acute malnutrition (WHZ and/or bilateral edema) and confidence interval by state.

The highest and lowest prevalence of GAM were found in Yobe and Zamfara states at 15.4 % (11.6 - 18.195% CI) and 6.4 % (4.8 - 8.4 95% CI) respectively. The prevalence of severe acute malnutrition ranged from 0.6% in Katsina to 3.1% in Yobe states.

Given the large number of population in surveyed areas (over 44 million), the result shows that considerable number of children are acutely malnourished and needs nutritional support.

Ten cases of bilateral edema were found in seven of the eight surveyed states; there were no cases of marasmic kwashiorkor (children with SAM and bilateral edema).

Table 1: Prevalence of global and severe acute malnutrition in children 6 to 59 months of age by state (WHZ WHO 2006 & MUAC WHO/UNICEF 2009)

	Acute Malnutrition WHZ			Acute Malnutrition MUAC		
State	N	Global Acute Mal-nutrition	Severe Acute Mal-nutrition	N	Global Acute Mal-nutrition	Severe Acute Malnutrition
Borno	701	13.8	2.6	716	8	1.7
		(10.6,17.8)	(1.8,3.7)		(5.2,12.0)	(0.9,3.3)
Jigawa	814	8	1.5	820	10	2
		(6.4,9.9)	(0.8,2.7)		(7.9,12.6)	(1.0,3.7)
Kano	845	6.5	1.1	852	8.1	2.1
		(5.2,8.2)	(0.6,2.0)		(5.3,12.1)	(1.1,4.0)
Katsina	867	6.8	0.6	869	7.6	1.2
		(5.4,8.6)	(0.3,1.3)		(5.6,10.3)	(0.6,2.3)
Kebbi	688	7.1	1.2	708	7.9	2.1
		(5.0,10.1)	(0.6,2.3)		(5.5,11.2)	(1.0,4.6)
Sokoto	689	11.9	2.9	707	10.2	3.7
		(9.4,15.0)	(1.8,4.6)		(7.7,13.4)	(2.5,5.4)
Yobe	765	14.5	3.1	776	10.2	2.4
		(11.6,18.1)	(2.1,4.7)		(7.4,13.8)	(1.4,4.3)
Zamfara	719	6.4	1.4	738	11.7	3
		(4.8,8.4)	(0.8,2.5)		(9.3,14.6)	(2.0,4.4)

Note: results in brackets are 95% confidence interval

Stunting or chronic malnutrition is a failure to grow in stature, and occurs as a result of inadequate nutrition over a longer time period. Underweight is a composite measure for stunting and wasting and is used globally to track progress with Millennium Development Goals (MDGs).

Chronic malnutrition measures height for age and underweight measures weight for age and the results are shown in table 2 below.

Note: According to WHZ, Global Acute Malnutrition (GAM) is <-2SD and Severe Acute Malnutrition (SAM) is <-3 SD. Estimate of global and severe acute malnutrition includes bilateral edema cases. Mid upper arm circumference (MUAC) used <125mm and <115mm as cut off for global and severe acute malnutrition. Stunting is defined as HAZ <-2SD and severe stunting is HAZ<-3SD and Underweight is defined as WAZ <-2SD and severe underweight is WAZ <-3SD.

Table 2: Prevalence of overall and severe chronic malnutrition (Height-for-Age) and Underweight (Weight-for-Age) in children 6 to 59 months of age by state (WHO 2006)

	Chronic Malnutrition			Underweight		
State	N	Stunting	Severe stunting	N	Under-weight	Severe Under-weight
Borno	694	46	19.3	705	31.6	10.5
		(38.8,53.3)	(13.9,26.2)		(24.3,40.0)	(6.8,15.8)
Jigawa	812	60.2	30	817	30.8	6.9
		(54.3,65.9)	(25.1,35.5)		(25.3,37.0)	(4.8,9.7)
Kano	828	47.9	17.6	848	24.5	6.1
		(40.9,55.1)	(13.3,23.1)		(19.7,30.2)	(3.6,10.2)
Katsina	860	41.7	17.9	867	27.1	7.6
		(34.0,50.0)	(12.9,24.4)		(21.8,33.2)	(5.2,11.0)
Kebbi	686	41.5	16.6	695	25.6	7.1
		(35.7,47.7)	(13.8,19.8)		(21.0,30.8)	(4.9,10.1)
Sokoto	684	42.5	17.1	697	27.8	7.3
		(37.3,48.0)	(12.8,22.5)		(23.3,32.9)	(5.4,9.9)
Yobe	755	58.5	28.2	766	44.6	14.8
		(50.9,65.8)	(21.8,35.6)		(38.6,50.9)	(11.3,19.1)
Zamfara	718	46.9	19.9	723	24.8	7.2
		(42.2,51.7)	(16.0,24.5)		(21.5,28.4)	(4.9,10.5)

Note: results in brackets are 95% confidence interval

Jigawa state was found with the highest stunting at 60.2 percent and Kebbi with the lowest prevalence at 41.5 percent. Across the survey domain, 42 to 60 percent of children 6-59 months of age were found stunted. Stunting above 40 percent is considered as critical, and all surveyed states are above this threshold. This indicates the existence of long term nutritional problem in the area.

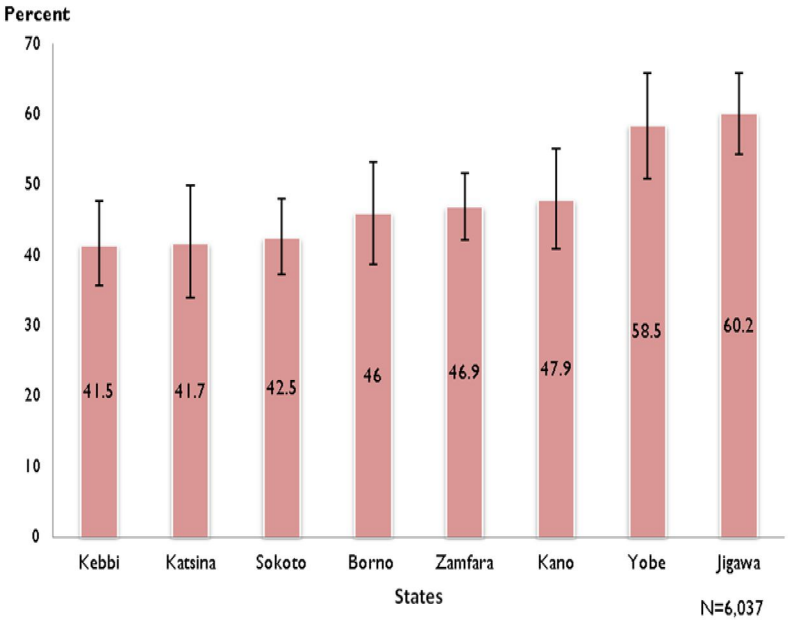

Figure 2: prevalence of stunting by confidence interval by state

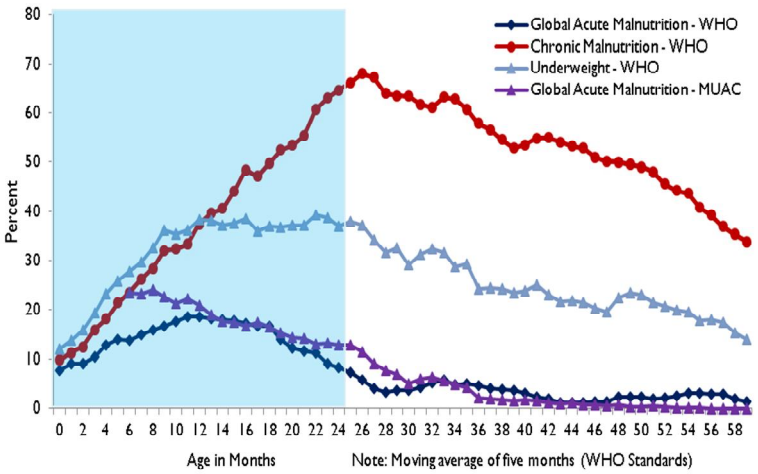

Figure 3: Trends of prevalence of GAM, Stunting, Underweight and MUAC by age in months

It is widely accepted that the first 1,000 days between a woman's pregnancy and her child's 2nd birthday is a window period to have a significant impact on a child's well being. Wasting and underweight reach peak during the first two years of life, while stunting increases quickly until it reach peak at about 25th months of age in the study. This substantiates a widely accepted pattern of onset and peak of malnutrition within the first 24 months of life.

2.2 Infant and Young Child Feeding Practice

Data on Infant and Young Child Feeding (IYCF) practices were collected using 24 hour recall for children aged 0-23 months, 2,859 children in total. Optimal infant and young child feeding: early initiation of breastfeeding, exclusive breastfeeding for 6 months, continued breast feeding until 2 years of age and nutritionally adequate complementary foods. These have a major impact on children's survival, growth and development.

Table 3: Proportion of children 0-5 months exclusively breastfed and children 6-23 months with minimum dietary diversity

State	N	Exclusive breast-feeding	N	Minimum dietary diversity
Borno	75	12	201	29.4
		[4.4,28.9]		[20.1,40.6]
Jigawa	96	6.3	252	35.7
		[2.6,14.2]		[25.5,47.4]
Kano	95	6.3	306	30.1
		[2.6,14.4]		[20.5,41.7]
Katsina	82	3.7	312	22.4
		[0.8,14.7]		[14.4,33.2]
Kebbi	88	25	231	36.8
		[14.1,40.3]		[28.7,45.7]
Sokoto	85	10.6	260	16.9
		[5.5,19.4]		[10.4,26.3]
Yobe	112	2.7	263	15.6
		[0.9,8.0]		[9.2,25.2]
Zamfara	80	11.3	252	19
		[5.5,21.7]		[11.7,29.5]

Note: results in brackets are 95% confidence interval

Across the surveyed states, 3 to 25 percent of children less than 6 months of age were exclusively breastfed.

Breast feeding beyond 6 months should be accompanied by additional complementary foods to meet the additional nutritional requirements as breast milk alone is no longer sufficient beyond this age. Dietary diversity is used as one of the indicators for assessing adequate complementary feeding among children aged 6 to 23 months. In Yobe state, only 16 percent of children consumed 4 or more of the 7 food groups used to calculate this indicator, while in Kebbi state 37 percent of children consumed 4 or more food groups.

2.3 Vitamin A and Deworming Coverage

Vitamin A supplementation and deworming coverage preceding six months of interview were assessed. Vitamin A supplementation reduces mortality among children under-five years significantly. Deworming which helps to expel intestinal worms is known to have impact on reduction of stunting and iron deficiency anemia. In Nigeria, Vitamin A supplementation and deworming is provided twice a year for children 6-59 and 12-59 months respectively. In Katsina state, 80 percent of children 6 - 59 months were reported to have received Vitamin A supplementation where as only 17 percent of eligible children were supplemented with vitamin A in Sokoto states.

Table 4: Vitamin A supplementation in children 6-59 and deworming coverage in children 12-59 months of age and by state

State	*N*	Vitamin A	*N*	Deworming
Borno	709	52.3	613	18.8
		(37.9,66.4)		(9.2,34.6)
Jigawa	795	57.2	687	17.6
		(41.5,71.6)		(8.2,33.7)
Kano	816	69.6	703	19.9
		(53.1,82.2)		(10.4,34.8)
Katsina	845	80.4	739	4.1
		(66.3,89.5)		(1.4,11.0)
Kebbi	688	25.7	602	1.3
		(14.1,42.1)		(0.4,4.0)
Sokoto	696	16.8		n/a
		(7.5,33.4)		
Yobe	764	36.9	664	6.6
		(24.5,51.4)		(3.2,13.1)
Zamfara	721	31.9	625	2.4
		(18.9,48.5)		(0.7,7.4)

Note: results in brackets are 95% confidence interval

2.4 Mortality

A recall period of seven months was used to estimate mortality rates using beginning of Ramadan as a reference point. The highest under-five death and crude mortality rates were found in Zamfara state at 0.51/10,000/ day and 1.67/10,000/day respectively. Mortality rate in all the states are below the average baseline for Sub-Saharan Africa, except in Zamfara and Sokoto states. Emergency threshold is reached when the baseline figure is doubled.

Table 5: Crude mortality rate and under-five death rate by state

State	Crude mortality rate (10,000/day)	Under-five death rate (10,000/day)
Borno	0.06	0.12
	[0.02, 0.15]	[0.03, 0.51]
Jigawa	0.12	0.2
	[0.06, 0.23]	[0.08, 0.52]
Kano	0.09	0.31
	[0.04, 0.20]	[0.13, 0.79]
Katsina	0.01	0.05
	[0.00, 0.10]	[0.01, 0.38]
Kebbi	0.06	0.18
	[0.02, 0.15]	[0.06, 0.57]
Sokoto	0.44	1.56
	[0.29, 0.65]	[1.05, 2.30]
Yobe	0.19	0.49
	[0.11, 0.33]	[0.25, 0.94]
Zamfara	0.51	1.67
	[0.33, 0.77]	[1.06, 2.61]

Note: results in brackets are 95% confidence interval

2.5 Women Nutritional Status

Women's nutritional status has effect on her chance of surviving pregnancy, her child's health and the community at large. Women's nutrition is used as a proxy indicator of household food insecurity. Malnutrition among women of reproductive age was assessed using Mid Upper Arm Circumference (MUAC), and results are shown in table 6 below. The lowest and highest prevalence of acute malnutrition according to MUAC were reported in Kebbi and Yobe states at 3.4% and 13.3% respectively.

Table 6: Acute Malnutrition according to MUAC by state

State	Low MUAC (<221mm)	N
Borno	4.8	601
	[3.1,7.1]	
Jigawa	8.1	643
	[5.9,11.2]	
Kano	7.7	715
	[5.8,10.3]	
Katsina	10.5	662
	[8.2,13.4]	
Kebbi	3.4	645
	[2.2,5.3]	
Sokoto	6.3	609
	[4.6,8.5]	
Yobe	13.3	591
	[9.6,18.3]	
Zamfara	4.7	672
	[3.5,6.3]	

Note: results in brackets are 95% confidence interval

Data from all the eight states, illustrated in figure 4 below, indicates that the highest levels of malnutrition using MUAC among women of reproductive age is among adolescents compared to the older women. The difference noted between adolescent girls and older women is statistically significant. Similar patterns were reported in nutrition survey conducted in 2010 and 2011 in the area

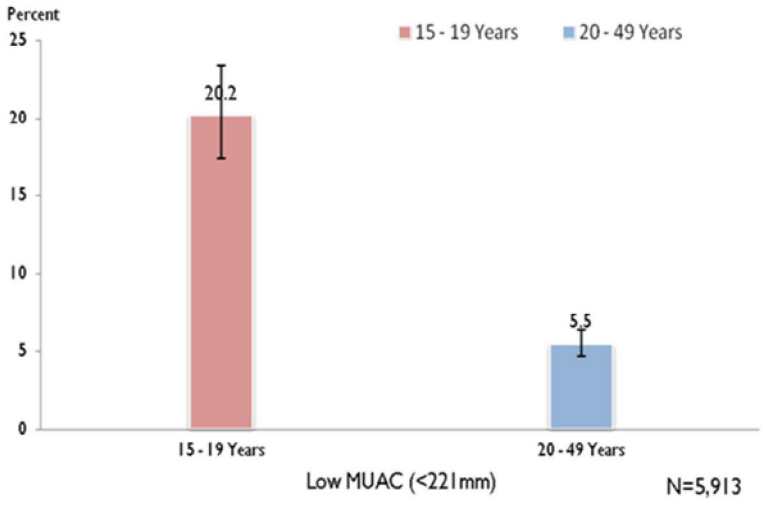

Figure 4: Percent of women with low MUAC by age groups

Despite the risk of undernutrition in teenage women as noted in the above figure, adolescence pregnancy was reported at 16.8% in the survey area which has an adverse birth outcome.

Figure 5: Percent of women pregnant by age groups

3. Conclusion and recommendation

1.This report shows that over 40 percent of children under-five are suffering from stunting across northern Nigeria. Stunting in early childhood results in diminished cognitive and physical development, which puts children at a disadvantage for the rest of their lives. It is concluded that undernutrition is one of a major development concern in the area.

Long-term and large-scale nutrition and health programmes should be in place to prevent malnutrition and address adverse effects of chronic malnutrition.

2. Global acute malnutrition ranges from 6.4 to 14.5 percent, while severe acute malnutrition ranges from 0.6 to 3.1 percent. Given the size of the population in surveyed area, the magnitude of the problem is considerable.

Children with severe acute malnutrition have 9 folds risk of death than non-malnourished children; hence providing nutritional support for children with severe acute malnutrition is imperative.

3. Wasting and underweight reached peak during the first two years of life in the survey area, while stunting reached its peak around 25th months of life. Similar pattern was seen in previous three nutrition surveys conducted in the area.

The practice of exclusive breast feeding for the first six months, initiation of breastfeeding within one hour of birth, continued breast feeding at two years of age, consumption of iron rich food and dietary diversity was reported low in the surveyed areas.

Improving infant and young child feeding practice; is therefore fundamental.

4. Seventeen percent of adolescent women were found pregnant in the surveyed areas. Adolescent women do not complete their growth and births during this period often end up in poor birth out- come and its subsequent effect. They were also found to be more malnourished compared to older women.

It is recommended to delay teenage pregnancy and improve teenage nutritional status which will have positive birth outcome and prevent the vicious cycle of intergenerational growth failure.

5. Low coverage of Vitamin A and deworming was reported in the survey area.

More effort should be done to improve the observed low coverage in the coming distribution rounds.

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