

Summary Findings of Cross-Sectional Nutrition Surveys Northern Nigeria, July/August 2011



1. INTRODUCTION

A cross-sectional anthropometric and retrospective mortality survey was conducted in seven states of Northern Nigeria from 21st July to 28th August 2011, using two stage cluster sampling method. The survey was conducted in 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 aged 15-49 years. Data were collected from a total of 4,452 households, 6,069 children under-five years of age and 5,727 women of reproductive age.

2. RESULTS

2.1. Child Nutritional Status

The WHO 2006 growth reference was used to analyse the nutritional status of children. Flagged data which mainly results from measurement error were excluded from the analysis. The global acute malnutrition (WHZ and/or bilateral edema) results are ranked in order from the lowest to the highest prevalence by state as shown in figure 1 below.

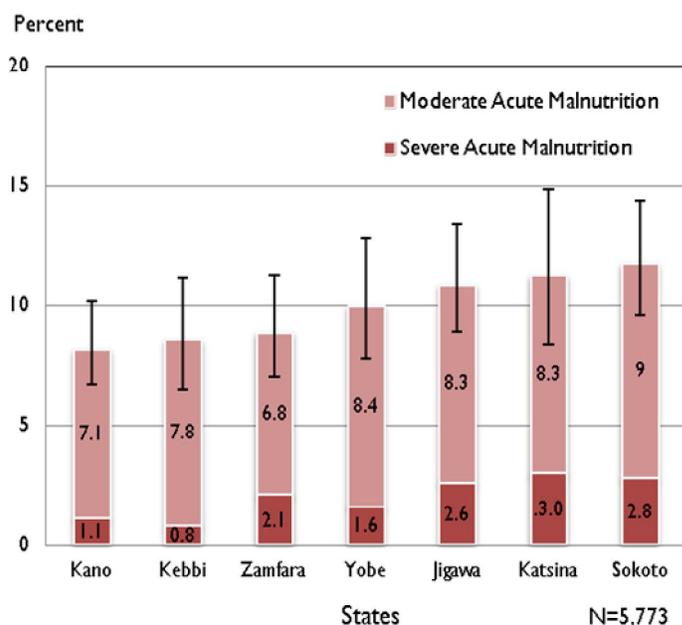


Figure 1: Global acute malnutrition (WHZ and/or bilateral edema) and confidence intervals by states.

Acute malnutrition was found above 10 percent in four of the seven states that were surveyed. The upper limits of confidence interval showed that the prevalence is above 10 percent for the other three states. This indicates that a significant number of children are currently acutely malnourished. The highest and lowest prevalence of global acute malnutrition according to WHZ-score were reported in Sokoto and Kano states at 11.8% and 8.1% respectively.

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.

Eleven cases of bilateral edema were identified in the total survey sample. One case of bilateral edema was identified in Yobe, 2 in Katsina and 4 each in Jigawa and Zamfara states. There were no case of marasmic kwashiorkor (children with severe acute malnutrition (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)

Survey Domain	Acute Malnutrition WHZ			Acute Malnutrition MUAC		
	N	Global Acute Malnutrition	Severe Acute Malnutrition	N	Global Acute Malnutrition	Severe Acute Malnutrition
Jigawa	775	10.8	2.6	791	10.6	3.2
		[8.8,13.3]	[1.4,4.6]		[8.2,13.7]	[2.1,4.8]
Kano	749	8.1	1.1	718	7.8	1.6
		[6.6,10.1]	[0.6,2.0]		[5.8,10.5]	[0.9,2.6]
Katsina	834	11.3	3.0	723	9.9	1.7
		[8.4,14.9]	[1.9,4.7]		[7.7,12.6]	[1.0,2.8]
Kebbi	885	8.6	0.8	609	11.2	2.8
		[6.5,11.2]	[0.4,1.8]		[8.8,14.1]	[1.7,4.5]
Sokoto	789	11.8	2.8	591	11.2	3.1
		[9.6,14.4]	[1.7,4.6]		[8.3,14.9]	[1.7,5.5]
Yobe	932	10	1.6	519	5.5	1.0
		[7.8,12.8]	[0.9,2.9]		[3.7,8.1]	[0.4,2.1]
Zamfara	809	8.9	2.1	623	12.8	4.2
		[7.0,11.3]	[1.3,3.3]		[10.6,15.3]	[2.9,6.1]

Note: results in brackets are 95% confidence intervals

Stunting also referred to as chronic malnutrition measures height for age and underweight measures weight for age are shown in table 2 below. Stunting indicates a failure to achieve one's genetic potential for height. Underweight is a composite measure for stunting and wasting and is used globally to track progress with Millennium Development Goals (MDGs).



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 states (WHO 2006)

Survey Domain	Chronic Malnutrition			Underweight		
	N	Stunting	Severe Stunting	N	Underweight	Severe Underweight
Jigawa	761	64.8	29.4	776	37.1	13.1
		[59.6,69.6]	[24.2,35.3]		[32.1,42.4]	[10.3,16.7]
Kano	728	53.7	23.1	756	30.4	9.5
		[48.0,59.3]	[18.6,28.2]		[26.3,34.9]	[7.2,12.5]
Katsina	822	54.3	19.1	836	29.7	8.6
		[47.6,60.8]	[14.2,25.2]		[24.5,35.4]	[6.3,11.7]
Kebbi	880	43.4	17.7	889	22.7	6.3
		[37.4,49.6]	[14.0,22.2]		[18.6,27.4]	[4.4,9.0]
Sokoto	786	36.3	11.1	793	24.0	6.6
		[30.1,42.9]	[8.3,14.7]		[18.7,30.1]	[4.6,9.3]
Yobe	907	37.2	13.5	932	22.3	5.3
		[30.3,44.6]	[9.9,18.0]		[16.6,29.2]	[3.1,8.7]
Zamfara	800	45.5	16.4	815	22.6	5.3
		[37.9,53.3]	[12.0,21.9]		[17.8,28.2]	[3.5,7.8]

Note: results in brackets are 95% confidence intervals

Jigawa state was found with the highest underweight children at 37.1% and Yobe with the lowest prevalence at 22.3%. Chronic malnutrition ranged from 64.8% to 36.3% of children 6-59 months of age in Jigawa and Sokoto states respectively as shown in figure 2 below. Stunting above 40 percent is considered as critical, and in 4 out of 7 surveyed states chronic malnutrition was found above this cut off point indicating the existence of long term nutritional problem in surveyed community.

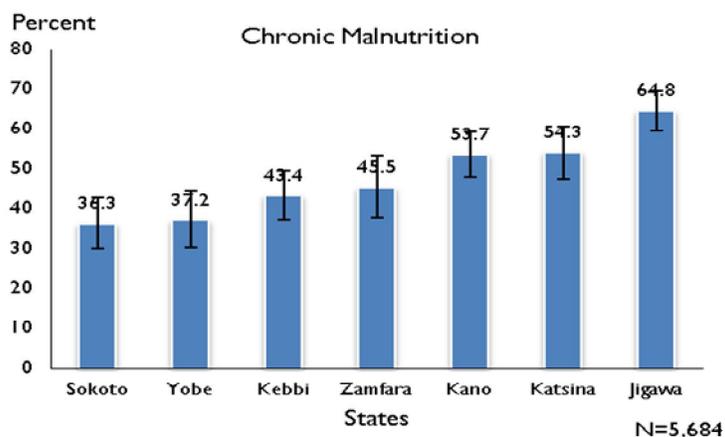


Figure 2: prevalence of stunting by confidence interval by state

Trends in acute malnutrition, underweight and stunting by age are shown in figure 3 below. The onset and peak of malnutrition by month are found within the first 24 months of life. By this age, the majority of the damage of malnutrition in childhood is done and cannot be reversed. The data from this survey confirms a widely confirmed pattern of onset and peak of malnutrition within the first 24 months of life. Malnutrition during the 24 months period is mainly a result of intra-uterine growth retardation, inadequate breastfeeding and poor quality and quantity of complementary foods.

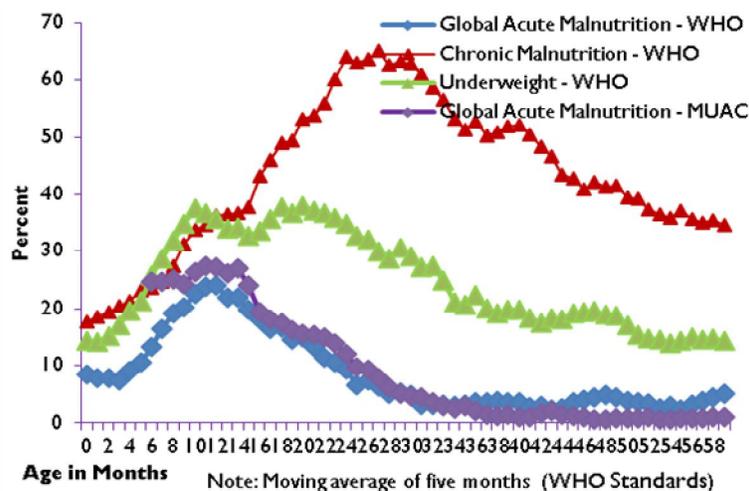


Figure 3: Trends of prevalence of GAM, Stunting, Underweight and MUAC<125mm by age in months

2.2. Vitamin A and Deworming Coverage

Data were collected on vitamin A supplementation and deworming to estimate the coverage during six months preceding the survey. Vitamin A supplementation reduces mortality among children under-five years significantly. Deworming which removes intestinal worms is known to have impact on reduction of stunting and iron deficiency anemia. The government of Nigeria and partners provide vitamin A supplementation and deworming twice a year for children 6-59 and 12-59 months respectively. In Katsina state, 62 percent of children 6 - 59 months were reported to have received Vitamin A supplementation where as only 38 percent of eligible children were supplemented with vitamin A in Jigawa and Kano states. Across the northern states, only 10 to 24 percent of children from 12-59 months of age were dewormed.

Table 3: Vitamin A supplementation in children 6-59 and deworming coverage in children 12-59 months of age by survey domain

Survey Domain	N	Vitamin A	N	Deworming
Jigawa	776	38.5	660	14.2
		[25.7,53.1]		[6.3,29.0]
Kano	762	38.3	660	12.1
		[28.3,49.4]		[6.8,20.8]
Katsina	816	62.3	713	24.1
		[46.2,76.0]		[13.7,38.9]
Kebbi	880	56.7	749	9.6
		[40.8,71.4]		[3.9,22.3]
Sokoto	791	40.2	686	9.9
		[26.9,55.1]		[4.5,20.6]
Yobe	923	47.6	808	9.5
		[31.9,63.7]		[2.6,29.6]
Zamfara	807	50.2	703	13.2
		[34.2,66.1]		[5.6,28.1]

Note: results in brackets are 95% confidence intervals



2.3 Mortality

Data was collected at individual level to estimate age specific mortality rate using seven months recall period. The highest under-five death and crude mortality rates were found in Yobe state at 0.18/10,000/day and 0.37/10,000/day respectively. Mortality rate in all the states are below the average baseline for Sub-Saharan Africa, which is 0.47/10,000/day and 1.07/10,000/day crude and under five death rates respectively. Emergency levels are experienced when the mortality figures double the sub-Saharan Africa baseline.

Table 4: Crude mortality rate and under-five death rate by state

States	Crude mortality rate [10,000/day]	Under-five death rate [10,000/day]
Jigawa	0.01 [0.00, 0.09]	0.05 [0.01, 0.36]
Kano	0.06 [0.03, 0.14]	0.10 [0.02, 0.39]
Katsina	0.07 [0.03, 0.15]	0.09 [0.02, 0.36]
Kebbi	0.11 [0.06, 0.22]	0.31 [0.12, 0.77]
Sokoto	0.06 [0.03, 0.14]	0.15 [0.05, 0.45]
Yobe	0.18 [0.10, 0.32]	0.37 [0.16, 0.84]
Zamfara	0.11 [0.05, 0.23]	0.28 [0.10, 0.76]

Note: results in brackets are 95% confidence intervals

2.4 Women Nutritional Status

Women's nutrition is critical for the life of the individual, her children, community and country. In terms of the mother-child dyad, malnutrition is critical in terms of the vicious cycle of growth failure. It is apparent that improved nutritional status before and during pregnancy can rapidly improve birth weight, even in populations of short adult women. Increasing birth weight contributes to reducing child growth faltering in the first 2 years of life leading to overall reductions of malnutrition. 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), Height and Body Mass Index (BMI) and results are shown in table 5 below. The lowest and highest prevalence of under-nutrition (low BMI) were reported in Kano and Yobe states at 18.7% and 38.6% in that order.

Note: Body mass index(BMI) is defined as weight in kg/height in meter square, Low BMI is <18.5, stunting is <145 cm in height and low MUAC is <221mm

Table 5: Stunting and low MUAC in all women and low BMI in non-pregnant women by state

States	Stunted (<145 cm)	Total N	Low MUAC (<221mm)	Total N	Low BMI (<18.5 kg/m ²)	Total N
Jigawa	3.5 [2.6, 4.9]	733	10.6 [8.6, 12.9]	739	23.4 [19.7, 27.5]	607
Kano	2.9 [1.9, 4.6]	753	9.9 [7.7, 12.7]	755	18.7 [15.7, 22.2]	624
Katsina	3.2 [2.3, 4.4]	754	8.5 [6.2, 11.5]	754	20.6 [17.0, 24.9]	606
Kebbi	1.5 [0.7, 3.0]	804	8.3 [5.4, 12.6]	804	19.2 [14.7, 24.7]	656
Sokoto	1.2 [0.6, 2.3]	740	10.4 [7.7, 13.8]	742	19.5 [15.6, 24.0]	605
Yobe	1.3 [0.7, 2.5]	765	18.9 [15.8, 22.5]	771	38.6 [34.1, 43.3]	627
Zamfara	1.8 [1.0, 3.2]	783	10.2 [8.6, 11.9]	787	22.3 [19.4, 25.6]	636
Overall		5,332		5,352		4,361

Note: results in brackets are 95% confidence intervals

The pooled data from all the seven states illustrated in figure 4 below indicates that the highest levels of malnutrition using MUAC, BMI and stunting among women of reproductive age is among adolescents as compared to the older women. This high undernutrition among adolescence highlights a potential determinant of child malnutrition due to intra-uterine growth retardation. The difference noted among adolescent girls and older women is statistically significant. Similar patterns were reported in nutrition survey conducted in 2010.

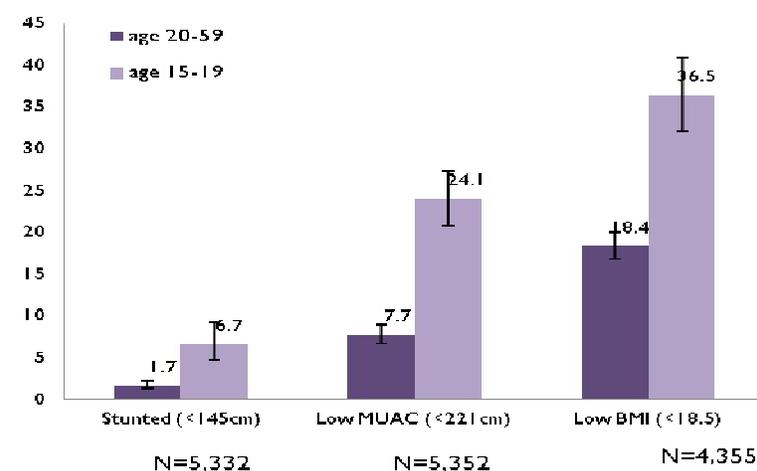


Figure 4: Percent of women with stunting, low MUAC and non-pregnant women with low BMI by age in groups

Pregnancy during adolescence was reported at 12.8% notwithstanding the risk of undernutrition in this same age group. Young mothers are at the highest risk of undernutrition.



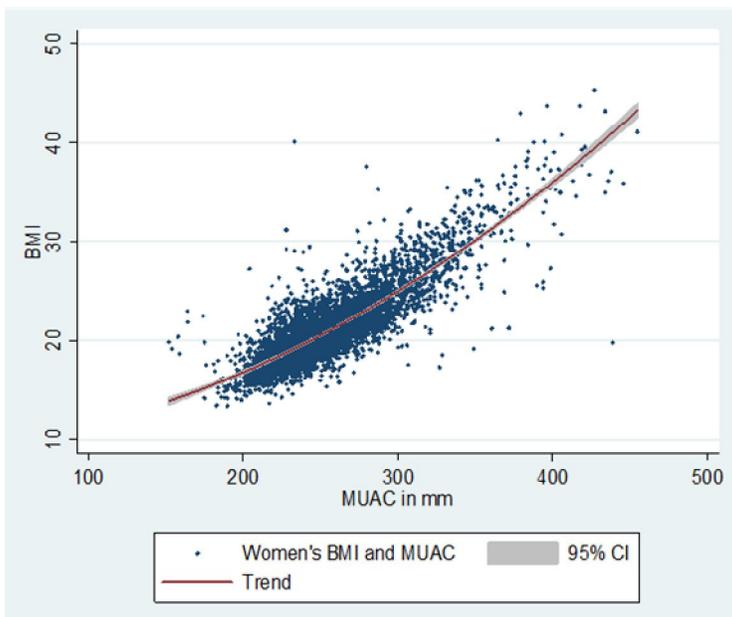


Figure 5: Mean MUAC and 95% confidence intervals in non-pregnant women by BMI category

It is important to demonstrate that there is a positive relation between MUAC and BMI. Similar findings were observed in two nutrition surveys conducted in 2010. The WHO studies also indicated the positive relation of BMI and MUAC.

3. Discussion

High prevalence of global acute malnutrition was observed in the surveyed areas. Four out of 7 states reported with global acute malnutrition of above 10 percent. The survey population is estimated at 38 million which comprised of 20 percent under-five populations, which gives a very high caseload.

Above 40 percent of under-five children were found chronically malnourished. This reflects the existence of long term nutrition related problem in the area. It is concluded that malnutrition is a major development concern in the survey areas.

Public health interventions like vitamin A supplementation and deworming coverage were found to be very low in most of the states, which is a missed opportunity to reduce child morbidity and mortality using maternal, newborn and child health week (MNCHW) held twice a year.

All forms of malnutrition reached the peak within the first two years. These findings are similar to patterns seen in similar nutrition studies. Similar results were observed in the nutrition surveys conducted in 2010 in the area. In addition to the feeding program currently provided for all under-five children infant and young child feeding practices should be improved to address the problem.

Adolescent women were found to be more malnourished compared to their older counterparts. Adolescent nutritional status affects birth outcomes and perpetuates the inter-generational cycle of growth failure.

4. Recommendations

I. Providing nutritional support for children under age of five should continue where the feeding program exists. Where the program doesn't exist yet, more effort should be done to address the need of children in the area, particularly of children under-two years.

II. Long term program to prevent malnutrition should be in place to curb the observed high chronic malnutrition in survey areas.

IV. Attention to be given to nutrition of teenage women which negatively impact and perpetuate inter-generational cycle of growth failure.

V. More effort should be done to improve the observed low coverage of vitamin A supplementation and deworming coverage in the subsequent distribution rounds.

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