

Summary Findings of Cross-sectional Nutrition Surveys in Northern Nigeria December 2010



1. INTRODUCTION

A cross-sectional anthropometric and mortality survey was undertaken in eight states of northern Nigeria from 10th to 25th of December 2010 with the main objective to determine nutritional status of under five children and women of reproductive age group (15-49 years). The survey was conducted in Borno, Jigawa, Kano, Katsina, Kebbi, Sokoto, Yobe and Zamfara states. This is the second survey conducted in northern states in 2010. Data were collected from 3,325 households and 4,914 children less than 5 years of age and from 4,551 women of reproductive age. A Multi stage cluster sampling method was employed to undertake the survey.

2. RESULTS

2.1. Child Nutritional Status

The anthropometric results of children 6 to 59 months of age were calculated using WHO growth reference standard of 2006. Flagged data identified were excluded from the analysis. Acute malnutrition (wasting) represents the failure to receive adequate nutrition in the period immediately before the measurements. Figure 1 below shows the results of global acute malnutrition by state.

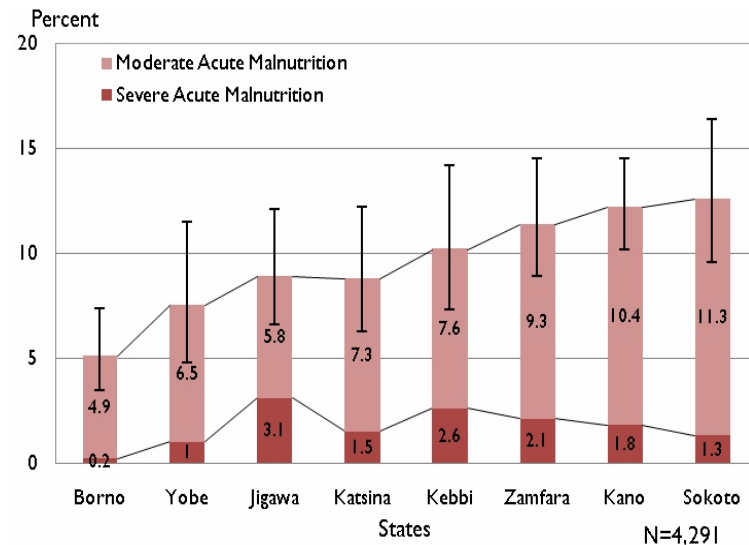


FIGURE 1: Global acute malnutrition (WHZ and/or bilateral edema) and confidence intervals by states.

The highest and lowest prevalence of global acute malnutrition using weight-for-height z-score (WHZ) were reported in Sokoto and Borno states at 12.6% and 5.1% respectively, as shown in table 1 below. Four out of the eight states had global acute malnutrition above 10 percent, which is high and warrants action. The upper confidence limit for all states, except Borno is above 10 percent. Twenty one cases of bilateral edema were reported in the total sample. One case of bilateral edema was identified in Katsina, six in Kano and fourteen in Jigawa states. There was no case of marasmus and kwashiorkor (children with severe acute malnutrition and bilateral edema).

Note: According to WHZ, Global acute malnutrition is <-2SD and severe acute malnutrition is <-3 SD. Note: Estimate of global and severe acute malnutrition included bilateral edema cases. Mid upper arm circumference (MUAC) used <125mm and <115mm as cut off for global and severe acute malnutrition

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 WHZ	Severe Acute Malnutrition WHZ	N	Global Acute Malnutrition MUAC	Severe Acute Malnutrition MUAC
Borno	491	5.1	0.2	500	5.3	1.0
		[3.5,7.4]	[0.0,1.4]		[3.5,7.9]	[0.3,3.6]
Jigawa	562	8.1	3.1	583	10.3	2.6
		[5.8,11.3]	[1.7,5.8]		[7.0,14.7]	[1.4,4.7]
Kano	539	11.7	1.8	559	8.8	1.6
		[9.7,14.0]	[0.9,3.7]		[5.9,12.8]	[0.7,3.7]
Katsina	509	8.8	1.5	514	8.6	3.6
		[6.3,12.2]	[0.7,3.3]		[6.2,11.8]	[2.2,5.8]
Kebbi	527	10.1	2.6	537	11.4	4.2
		[7.2,14.1]	[1.6,4.2]		[8.8,14.6]	[2.5,6.9]
Sokoto	545	12.6	1.3	571	11.6	2.3
		[9.6,16.4]	[0.6,2.8]		[8.3,15.9]	[1.3,4.0]
Yobe	456	7.5	1	466	11.5	1.6
		[4.8,11.5]	[0.5,2.1]		[7.4,17.4]	[0.7,3.6]
Zamfara	662	11.4	2.1	677	16.2	5.2
		[8.9,14.5]	[1.2,3.7]		[13.4,19.5]	[3.4,7.8]

Note: results in brackets are 95% confidence intervals

This survey was conducted in December (post-harvest season) when we expect to see a reduction in acute malnutrition. An expected decrease was noted in Borno, Katsina, Jigawa, Zamfara, Yobe and Kebbi states. This decrease was only significant in Kebbi and Yobe states. In Kano and Sokoto an increase in global acute malnutrition was noted, though it was not significant.

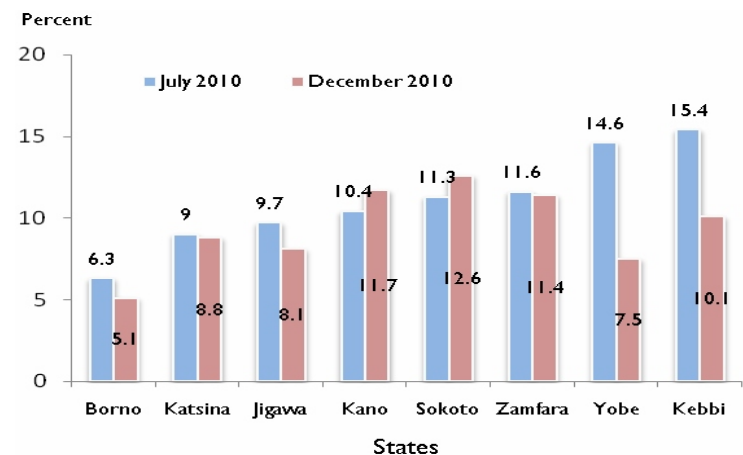


FIGURE 2: Prevalence of global acute malnutrition (WHZ and/or bilateral edema) before and after harvest by states



Results of chronic malnutrition and underweight are presented in table 2 below. Stunting is an indicator of linear growth retardation and cumulative growth deficits. It is a consequence of chronic nutritional deprivation that can also begin before birth, if the mother is undernourished.

Underweight is a composite index of height-for-age and weight-for-height. It takes into account both acute and chronic malnutrition. It is used globally to track progress with Millennium Development Goals (MDGs).

Table 2: Prevalence of overall and severe chronic malnutrition (Height/Age) and Underweight (Weight/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
Borno	477	44.3	20.4	493	24.9	6.7
Jigawa	554	68.4	42.8	569	35.8	13.5
Kano	522	63.9	38	550	40.7	17.3
Katsina	492	66.0	41.9	503	44.9	15.2
Kebbi	508	65.4	33.6	533	40.9	15.1
Sokoto	544	66.1	34.9	565	42.5	15.9
Yobe	434	57.8	32.7	456	41.7	15.7
Zamfara	663	64.8	34.4	668	40	13.2

Note: results in brackets are 95% confidence intervals

Underweight was highest and lowest in Katsina and Borno at 44.9% and 24.9% respectively. Stunting a measure of chronic malnutrition was found to be above 50 percent in all states, except in Borno. The highest and lowest stunting levels were noted in Jigawa and Borno states at 68.4% and 44.3% respectively as shown in figure 3 below.

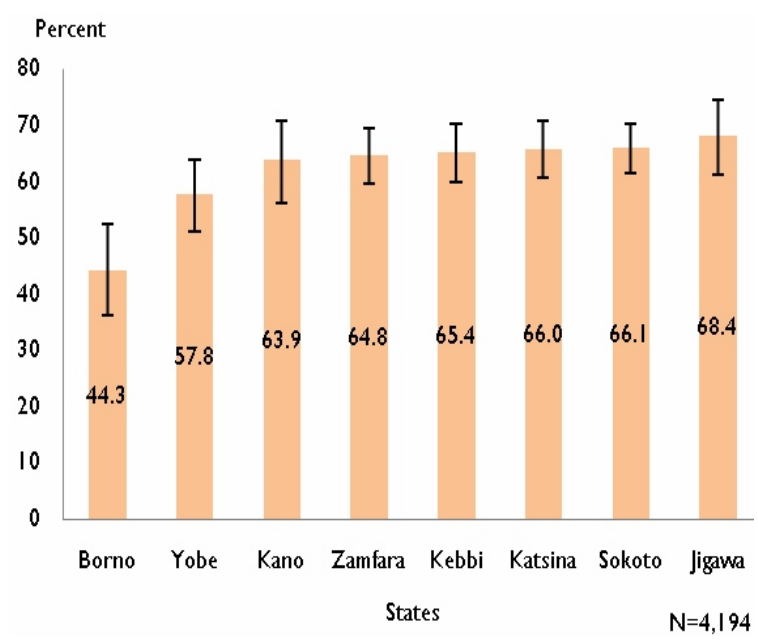


FIGURE 3: prevalence of overall and severe stunting and confidence interval by state

Change in stunting is not expected within short period of time as it is the result of long term nutritional deficit. A significant difference in stunting was observed in Jigawa and Kebbi states. In most of the states, prevalence of chronic malnutrition is similar to DHS 2008 results.

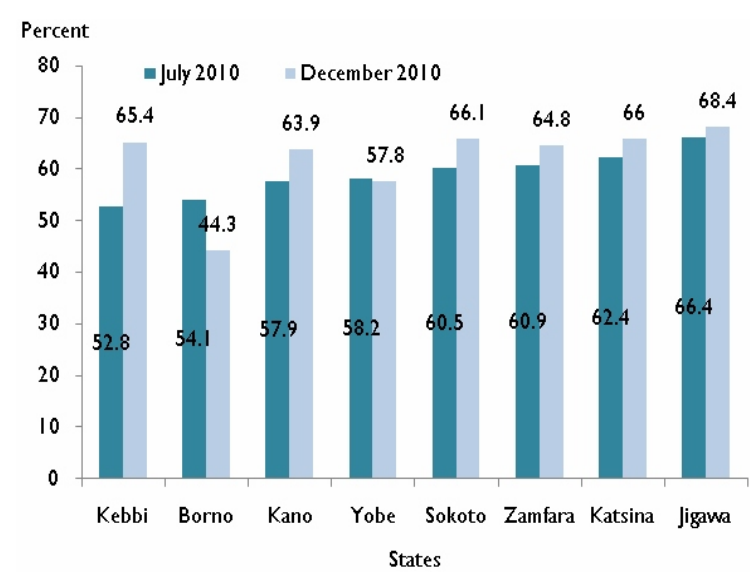


FIGURE 4: prevalence of stunting by state

A critical window of opportunity to prevent undernutrition is during a child's first two years of life as shown in figure 3 below. Proven nutrition interventions during this period and pregnancy offer children the best chance to survive and reach optimal growth and development. The survey result further confirm this widely accepted window of opportunity as all form of malnutrition reach their peak before the child is two years of age.

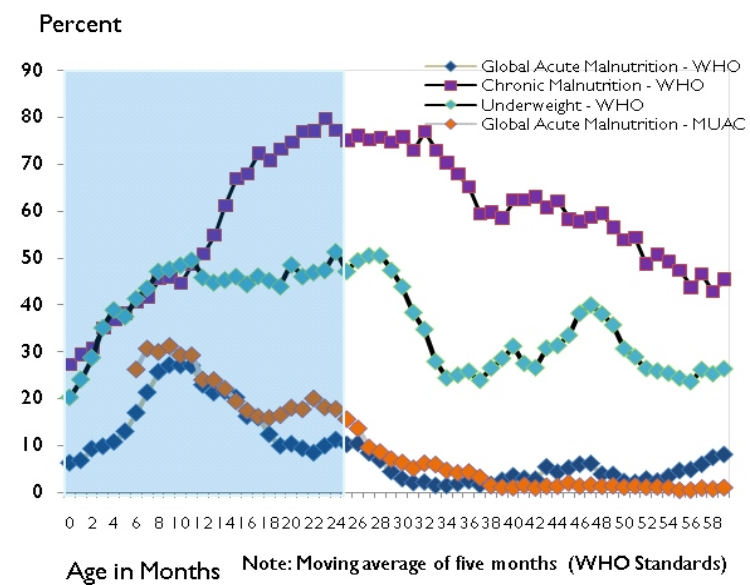


FIGURE 5: Trends of prevalence of GAM, Stunting, Underweight and MUAC by age in months

2.2. Vitamin A and Deworming Coverage

Vitamin A is vital for the body's immune function. Improving the vitamin A status of deficient children through supplementation enhances their resistance to disease and can significantly reduce mortality (by 23%). Where inadequate sanitation and unhygienic conditions prevail as the case in most developing

Note: Stunting is defined as HAZ <-2SD and severe stunting is HAZ <-3SD. Underweight is defined as WAZ <-2SD and severe underweight is WAZ <-3SD

countries, helminthes represent a serious public health problem. The government of Nigeria and partner organizations provides vitamin A supplementation and deworming twice in a year.

The survey result from eight states showed that the highest and lowest prevalence of vitamin A was found in Kebbi and Yobe states at 97.3% and 13.7% respectively. Deworming coverage was found highest in Katsina at 72.9% and lowest in Yobe state at 5.9%. A significant difference in coverage of vitamin A was noted from the two surveys in all states. Deworming coverage was also significantly different in all states except Kano and Zamfara.

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
Borno	485	88.1 [83.4,91.6]	441	14.1 [10.2,19.1]
Jigawa	582	58.4 [42.5,72.7]	526	7.1 [3.0,15.8]
Kano	557	59.4 [42.0,74.6]	484	21.5 [12.2,34.9]
Katsina	522	79.7 [71.1,86.3]	455	72.9 [60.8,82.3]
Kebbi	534	97.3 [94.5,98.7]	479	38 [25.9,51.8]
Sokoto	569	56.2 [41.3,70.1]	506	6.8 [2.8,15.7]
Yobe	455	13.7 [6.5,26.7]	408	5.9 [2.9,11.4]
Zamfara	677	92.4 [86.2,96.0]	586	20 [10.8,34.2]

Note: results in brackets are 95% confidence intervals

2.3 Mortality

A six months recall period was used to collect age specific mortality data. The mortality rates in all states were found to be below the average baseline for sub-Saharan Africa, which is 0.44/10,000/day and 1.14/10,000/day for crude and under five death rates respectively. Emergency levels are experienced when mortality figures double the sub-Saharan Africa baseline.

Table 4: Crude mortality rate and under-five death rate per 10,000 persons per day by state

States	Crude mortality rate (10,000/day)	Under-five death rate (10,000/day)
Borno	0.08 [0.03 - 0.22]	0.10 [0.01 - 0.79]
Jigawa	0.12 [0.4 - 0.39]	0.32 [0.12 - 0.83]
Kano	0.33 [0.20 - 0.53]	0.73 [0.36 - 1.47]
Katsina	0.07 [0.02 - 0.17]	0.25 [0.08 - 0.75]
Kebbi	0.21 [0.12 - 0.38]	0.74 [0.35 - 1.53]
Sokoto	0.26 [0.15 - 0.46]	0.39 [0.12 - 1.25]
Yobe	0.07 [0.03 - 0.18]	0.37 [0.15 - 0.92]
Zamfara	0.02 [0.00 - 0.12]	0.07 [0.01 - 0.53]

Note: results in brackets are 95% confidence intervals

Higher under five mortality rate was observed in lean period as compare to post harvest season as shown in figure 6 below.

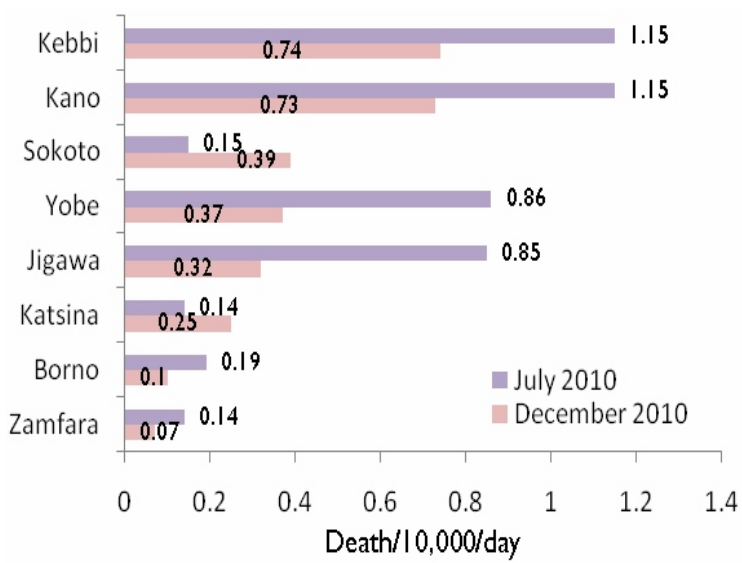


FIGURE 6: Under five mortality rate/10,000/day

2.4 Women Nutritional Status

Maternal nutritional status before and during pregnancy determines the birth weight outcome to a great extent. Well-nourished women face fewer risks during pregnancy and childbirth. A chronically undernourished woman will give birth to a baby who is likely to be undernourished, thus causing the cycle of poverty and poor health.

The nutritional status of women was assessed using mid upper arm circumference (MUAC), body mass index (BMI) and height in this survey and results are presented in table 5 below. Kebbi and Zamfara states were found to have the highest and lowest under nutrition (<18.5 BMI) at 45.6% and 10.1% respectively. Yobe state had the highest prevalence of low MUAC (<221mm) among women of child bearing age at 14.2%, while Kebbi had the lowest prevalence at 6.1%. The highest and lowest stunting results were reported in Yobe and Kebbi states at 4.2 and 0.6 percent respectively.

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

States	All women				Non pregnant women	
	Stunted	N	Low MUAC	N	Low BMI	N
Borno	0.8 [0.3,2.4]	501	9.9 [6.6,14.4]	501	20.7 [15.7,26.7]	425
Jigawa	2 [1.1,3.6]	611	9 [7.1,11.4]	613	28.2 [21.0,36.6]	499
Kano	2.7 [1.8,4.2]	580	10.2 [7.7,13.5]	580	25.4 [21.1,30.3]	483
Katsina	1.3 [0.7,2.5]	562	6.8 [5.1,9.0]	562	21.3 [17.0,26.4]	446
Kebbi	0.6 [0.2,1.9]	617	6.1 [4.4,8.2]	618	45.6 [33.2,58.6]	496
Sokoto	1.5 [0.7,3.1]	608	6.2 [3.7,10.2]	608	22.1 [17.4,27.6]	523
Yobe	4.2 [2.2,7.9]	398	14.2 [9.4,20.7]	398	32.6 [26.6,39.1]	332
Zamfara	3.8 [2.3,6.3]	640	6.8 [4.7,9.6]	639	10.1 [6.0,16.7]	526
Overall		4,517		4,519		3,730

Note: results in brackets are 95% confidence intervals

Note: Crude mortality is total number of deaths per 10,000 per day

Adolescent girls were found with higher prevalence of acute malnutrition (low MUAC), underweight (low BMI) and stunting (<145cm) compared to their older counterparts. This under-nutrition in women of reproductive age affects the nutritional situation of children through intra-uterine growth retardation.

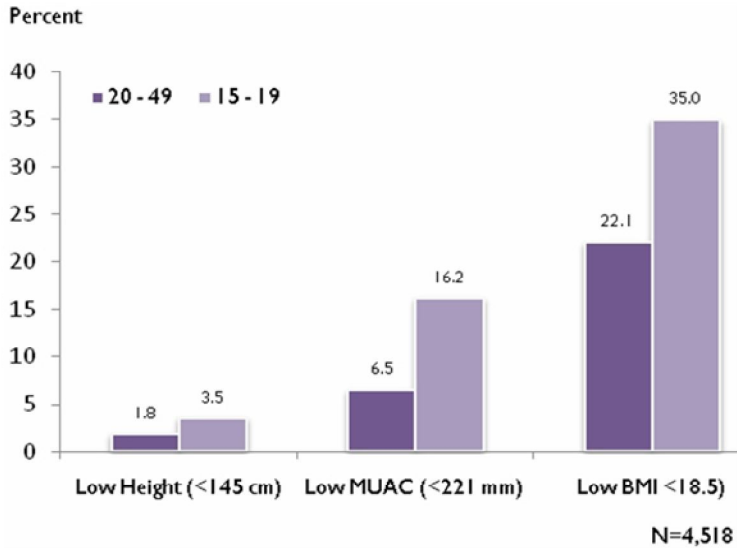
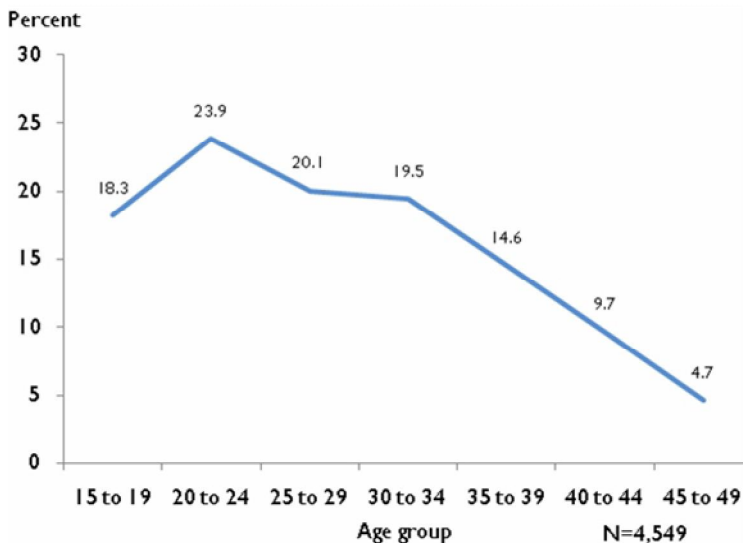


FIGURE 7: Percent of women with low height, low MUAC and non-pregnant women with low BMI by age in groups

Adolescent girls carry a higher burden of undernutrition among women of reproductive age as shown in figure 7 above. All three forms of malnutrition were found significantly higher among adolescent girls as compare to older women.

A comparison of nutrition situation of women of reproductive age in December against July as baseline shows an increase in stunting in Yobe and Zamfara a trend that was not expected. Significantly higher levels of low BMI were noted in Jigawa, Kano and Kebbi using the July results as a baseline. In Yobe state the prevalence of low BMI decreased from 45.2 to 32.6 percent. Similarly, significantly higher prevalence of low MUAC was recorded in Jigawa and Kano states in December using July as a baseline .



It is illustrated in figure 8 above that 18.3% of adolescent mothers were found pregnant during the survey. Young girls are at the highest risk of undernutrition.

3. DISCUSSION

The prevalence of global acute malnutrition reported in this study is high. Four out of eight states surveyed were found to have prevalence above 10 percent. Malnutrition contributes to over 50% of all under five deaths thus there is need for a response to reduce acute malnutrition.

Over 50 percent of under five children in all states except in Borno (44.3%) where found chronically malnourished. Chronic malnutrition affects human productivity at adulthood and eventually impact on economic development of the country. The situation is critical and more effort should be placed on long term nutrition programs.

It was observed from the survey that the first two years of age is when malnutrition sets in, reaches the peak and is the window of opportunity to tackle malnutrition among children. All forms of malnutrition were found high in the first two years of age. Hence, it is advisable to improve infant and young child feeding practice during this period.

Adolescent girls were found more malnourished than older women. Pregnancy was also observed high in this age group. Emphasis should be given to improve nutrition of adolescent girls.

Sustained high coverage of vitamin A and deworming can significantly reduce child morbidity and mortality. In the surveyed areas, great effort is required to further improve coverage.

4. RECOMMENDATIONS

I. It is recommended to scale up the community based management of acute malnutrition (CMAM) and inpatient management of acute malnutrition from the current 145 sites. Much attention should be given to children in the first two years of life. It is also recommended to assess the coverage of feeding programs to measure how the existing programs meet the needs of severely malnourished children.

II. Improving breastfeeding and complementary feeding practices, maternal nutrition, household food security, access to safe drinking and hygiene, maintaining high level coverage of public health interventions is necessary to reduce high levels of acute and chronic malnutrition.

III. As maternal nutrition has a direct impact on the nutritional status of children and eventually to the community, attention needs to be given to adolescent nutrition. Delaying the first pregnancy and improving maternal nutrition are recommended to address the current challenge.

IV. Efforts to achieve high and sustained coverage of vitamin A supplementation and deworming should be continued.

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