

Nutritional Status of Children during and post-Global Economic Crisis in China*

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Abstract

Objective To describe the impact of the global economic crisis on the nutritional status of children in China during and after the crisis.

Methods Data from 1990 to 2010 were sourced from the National Food and Nutrition Surveillance System. Approximately 16 000 children under 5 years old were selected using a stratified random cluster method from 40 surveillance sites. Anthropometric and hemoglobin measurements for children under 5 were conducted. Nutritional status was determined according to WHO child growth standards.

Results Prevalence of underweight and stunting in children under 5 had a downward trend. Underweight prevalence was close to normal (less than 5%), with prevalence of stunting 12.6% in 2009 and 12.1% in 2010 in rural areas. Prevalence of stunting in infants under 6 months and 6-12 months old in poorer rural areas increased from 5.7%-9.1% and 6.7%-12.5%, respectively, in 2008-2009. This trend also continued post-crisis in 2010. Prevalence of stunting in children left behind by mothers was 20%-30% higher than in children the same age in general and poorer rural areas. Prevalence of anemia in children did not change in rural areas, but prevalence of anemia in all age groups increased in poorer rural areas, especially in children under 24 months old. Level reached 30%-40% in 2009, and fluctuated in 2010.

Conclusion The nutritional status of children under 5 was comparatively stable during and after the global economic crisis, attributable to the Chinese government's policy response. The nutritional status in poorer rural areas fluctuated in response to the economic crisis and, thus, relevant action and intervention must be taken immediately to help the most vulnerable population in poorer rural areas. A proper national nutritional strategy for children under 2 years old, including nutrition supplementation for pregnant women and in-home fortification for complementary feeding, should be initiated.

Key words: Economic Crisis; Stunting; Underweight; Anemia; Children; Infant; Surveillance

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INTRODUCTION

A global economic crisis emerged in the second half of 2008, followed a food crisis. According to the Food and Agriculture Organization of the United Nations (FAO), for the first time in history the number of people suffering from starvation reached over 1 billion (1.02 billion). In 2009, this number increased by a further

100 million people, and it is estimated to have increased by another 925 million in 2010^[1-2]. The reason behind this trend was the surging price of oil and food in 2007 and 2008, and the following financial crisis. The FAO report shows that the supply of food remained unchanged, but that people with low incomes could not afford to buy enough food. The rate of malnutrition declined in the 1990s, but the trend reversed in 2008. It is estimated that there

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are 642 million people with poor nutritional status in Asia. The escalation in malnutrition has led to a decrease in labor productivity, and has endangered the health and the ability to work of the next generation. These effects will jeopardize future social economic development. Thus, immediate action must be taken in an economic crisis, even when money is limited. Despite a fall in food prices and an improvement in global economic conditions, the number of malnourished people was still at its second-highest level in history during the post-crisis period.

During an economic crisis, women and children are the most-affected victims^[3]. According to an estimate from UNICEF, approximately 200 million children under 5 years old suffered from stunting and 130 million were underweight globally in 2009^[4]. Undernourished children under 5 years old are more susceptible to diseases, and experience productivity loss due to insufficient cognitive ability, which will impede the future social and economic development of a nation. Therefore, the monitoring of the nutritional status of children during and after an economic crisis is a key indicator for assessments regarding policy responses to the crisis, and the following situation when the crisis begins recede. The poor nutritional status of children and its role in nations' development has attracted worldwide attention.

Dramatic achievements in China's recent economic growth have been recognized worldwide. The nutritional status of children, both in urban and rural China, has steadily improved alongside China's 30 years of economic reform and the implementation of its opening-up policy. In reaction to the global economic crisis of 2008–2009, the Chinese government introduced a series of policy responses, which resulted in an average annual economic growth of 8% for the last 10 years. What is the effect and outcome of the policy responses to the crisis on the current nutritional status of children in China, and what improvements will child nutrition experience during the post-crisis period? This is an issue of concern not just for the Chinese government but also for nations worldwide, especially developing countries. This paper is based on surveys of the nutritional status of children in 2009 and 2010, and a comparison with surveillance data on the nutritional status of children, from 1990 to 2008.

METHODS

The data were sourced from the National Food

and Nutrition Surveillance System (NFNSS) which was formally established in 1997, based the experiences of pilot studies in 1990 and 1995. According to the stratification indicator system developed by the Ministry of Health, which was based on 145 National Disease Surveillance Sites and 600 household social economic survey sampling sites from the State Statistics Bureau, a strata of urban, general rural, and less-developed rural areas were defined and 40 sites were randomly sampled as a national sample. The sample included 14 urban sites, 17 general rural sites, and 9 poorer rural sites in 26 provinces. Approximately 400 children were sampled in each site, and a stratified random cluster sampling method was used. The representativeness of the sample is reliable^[5]. In the surveys, we conducted anthropometric and hemoglobin measurements for children under 5 years old and conducted face-to-face questionnaire interviews with the children's caregivers. Information, including the child's age, sex, complementary feeding practices, and other data, were obtained by interviewing the caregivers.

WHO child growth standards were used to calculate Z-scores for height-for-age (HAZ) and weight-for-age (WAZ) measurements^[6]. According to recommendations, stunting was determined as HAZ<-2 and underweight as WAZ<-2. Hemoglobin was measured using the cyanmethemoglobin method with finger blood. We used the WHO anemia definition for children under 5 years old (Hemoglobin<110 g/L), and the cutoff point of anemia for children was adjusted in study areas with altitudes higher than 1 000 m^[7].

The database was established using EpiData software(EpiData Association, Denmark) and duplication was adopted for data entry. Statistical analyses were conducted using SAS statistical software package version 9.13 (SAS Institute Inc., Cary NC, USA).

RESULTS

Approximately 16 000 children under 5 years old are recruited each year by the NFNSS. The number of children who participated in the survey from 2000 to 2010 is shown in Table 1. There appears to be no significant differences in the age and gender ratio distributions. Urban areas were not included in the surveillance in 2008 and 2009 because the prevalence of undernutrition in urban children was

very low from 2000 to 2005.

Table 1. Sample Size of Children in the NFNSS

Year	Urban	Rural
2000	5 764	10 728(3 704)
2005	5 519	10 468(3 601)
2008	-	10 726(3 753)
2009	-	10 638(3 771)
2010	4 803	10 596(3 820)

Note. Figures in parentheses show the sample size of children in poorer rural areas.

Changes in Prevalence of Undernutrition in Children under 5 years old

The prevalence of underweight and stunting in children under 5 years old has followed a downward trend since the 1990s (Table 2). However, this reduction prior to 1995 was extremely slow, after which the levels lowered at a faster rate. By 2008, the prevalence of underweight children under 5 years old was close to normal levels (less than 5%) in rural areas, and stunting rates were 13.7%. Both rates continued to decrease until 2009.

The prevalence of underweight and stunting dropped 64.2% and 60.7%, respectively, between 1990 and 2005, with a reduction of 63.0% and 59.6%, respectively, in rural areas in the same period. The annual reduction in percentage points (ppt) for underweight and stunting during 1995 to 2000 was 0.76 and 3.1, 0.83, and 1.4 during 2000 to 2005, and 0.33 and 0.8 during 2005 to 2008, respectively. However, in 2008-2009, the ppt for underweight and

stunting had slowed to 0.2 and 0.7, respectively; by 2009 the rate of improvement were slowing in rural areas (Table 3).

Table 2. Undernutrition Prevalence in Children under 5 Years Old from 1990 to 2009(%)

Year	Underweight ^a			Stunting ^a		
	National	Urban	Rural	National	Urban	Rural
1990	13.7	5.3	16.5	33.1	11.4	40.3
1995	11.4	3.4	14.1	33.2	10.4	40.8
1998	7.8	1.8	9.8	22.3	5.3	27.9
2000	8.2	2.0	10.3	20.0	4.1	25.3
2005	4.9	1.4	6.1	13.0	3.1	16.3
2008	-	-	5.1	-	-	13.7
2009	-	-	4.6	-	-	12.6

Note. ^aCochran-Armitage test for trend, $P<0.0001$ in Urban and Rural.

Prevalence of Stunting in Rural Areas

Despite the dramatic improvement in childhood nutrition in China, the situation in poorer rural areas has barely changed from 1998 to 2000. However, the prevalence of stunting reduced significantly to just 18.9% in 2008. The prevalence of stunting was approximately 36.0% in 2000, 1.5 to 2 times higher than the average levels in general rural areas up until 2002 (according to data from the 2002 Nationwide Nutrition and Health survey of China). From 2002, rural rates began to decline and in 2005 it dropped by 16 ppt. However, in 2008 the prevalence of stunting in children under 5 years old was still high at 18.9% in poorer rural areas, and in 2008-2009, only a 0.6-ppt reduction was achieved (Table 4).

Table 3. Annual Reduction (in percentage points, ppt) of Undernutrition in Children under 5 Years Old

Duration	% Annual Income Increase of Farmers	Reduction of Stunting Prevalence(ppt)		Reduction of Underweight Prevalence	
		National	Rural (Poor Rural) ^a	National	Rural (Poor Rural)
1990-1995	26.0	0	0	0.46	0.50
1995-2000 ^b	8.9	2.6	3.1 (0)	0.68	0.76 (0)
2000-2005	8.9	2.6	1.4 (3.2)	0.66	0.84 (1.3)
2005-2008	15.4		0.8 (0.7)	-	0.33 (0.7)
2008-2009	6.0		1.1 (0.6)		0.5 (1.2)

Note. ^aFigures in parentheses are from poorer rural areas, ^bSurveillance in poorer rural areas began in 1998.

It is worth noting that the changes from 2008 to 2009 were very limited in rural areas. While it followed the decreasing trend, the changes in prevalence among all age groups tell another story. The prevalence of stunting in children of all ages in general rural areas in 2009 remained the same or

slightly decreased compared with the prevalence in 2008 (Table 5). The prevalence of stunting in infants under 6 months and 6-12 months old in poorer rural areas both increased, from 5.7% to 9.1% and from 6.7% to 12.5%, respectively. The prevalence of stunting in children in other age groups remained at

the same level or decreased slightly (Table 6).

Table 4. Stunting Prevalence in Children in General Rural Areas^a and Poorer Rural Areas

Year	National Rural	General Rural	Poorer Rural
1998	27.9	23.4	36.4
2000	25.3	19.1	36.9
2005	16.3	13.9	20.9
2008	13.7	10.9	18.9
2009	12.6	9.4	18.3

Note. ^aThe figures for “General Rural” are the average of “National Rural” with the exclusion of the subjects from “Poorer Rural”.

Table 5. Stunting Prevalence in Children in Different Age Groups from 1998 to 2009 (General Rural Areas)

Age (month)	1998	2000	2005	2008	2009
0-5	14.4	8.8	5.3	4.4	4.2
6-11	13.9	11.8	7.8	5.9	3.8
12-23	25.9	23.0	14.2	13.5	12.3
24-35	27.5	20.7	15.2	12.3	11.8
36-47	24.5	22.4	18.2	12.0	9.6
48-60	22.4	17.7	16.0	10.5	8.9

Table 6. Stunting Prevalence in Children in Different Age Groups from 1998 to 2009 (Poorer Rural Areas)

Age (month)	1998	2000	2005	2008	2009
0-5	23.2	13.2	5.2	5.7	9.1
6-11	22.9	23.3	13.1	6.7	12.5
12-23	39.6	44.2	21.8	23.5	22.8
24-35	42.1	40.9	23.5	22.0	20.4
36-47	37.9	42.0	27.5	20.5	18.4
48-60	37.3	36.7	20.3	20.2	17.1

Among the rural residents in this project, those in the bottom 10% household income group (average annual per capita income was 917 RMB in 2008) have a prevalence of stunting of 22.5%, which is higher than the average level (18.9%) in poorer areas. In addition, in 2009, stunting prevalence for those in the bottom 10% income group (average annual per capita income was 829 RMB in 2009) stood at 21.3%. There was almost no change in stunting rates, rates that were 3 times that of the children in top 10% income group.

Nutritional Status of Children in Poorer Areas Left by Migrant Mothers

Both in general and poorer rural areas, the

prevalence of stunting for children left behind by mothers who migrated to cities for work was 20%-30% higher than others of the same age, both in general and poorer rural areas (Tables 7 and 8).

Table 7. Stunting Prevalence (%) in Rural Infants with Migrant and Non-migrant Mothers in 2009

	Area	Migrant Mothers	Non-migrant Mothers
Children < 5 years	Rural average	17.8	12.0
	General rural	12.5	9.3
	Poor rural	22.9	16.8
Infant < 12 months	Rural average	7.4	5.9
	General rural	3.3	3.5
	Poor rural	15.9	11.0

Table 8. UnderWeight Prevalence (%) of Rural Infants with Migrant and Non-migrant Mothers in 2009

	Area	Migrant Mothers	Non-Migrant Mothers
Children <5 years	Rural average	6.8	4.4
	General rural	5.9	3.7
	Poor rural	7.6	5.7
Infant <12 months	Rural average	5.2	3.7
	General rural	5.4	2.9
	Poor rural	4.6	5.4

Anemia Prevalence among Children under 5 years old

Table 9 shows the prevalence of anemia in children in rural areas. The average percentage of anemia in children under 5 years old did not change even when the rates in general rural areas were improving. No changes were recorded among children aged 0-24 months old from 2008 to 2009, however, improvements were seen after 2 years of age. In poorer rural areas, the prevalence of anemia in all age groups increased, especially in the groups under the age of 24 months, which reached rates of 30%-40%, similar to levels seen in 2005. Compared with the tremendous improvements in the prevalence of stunting among infants since 2005, the changes in anemia prevalence for all infants aged 0-12 months were slight. This result can be explained by the fact that the rapid increase in anemia was a result of anemia incidences during the crisis, which affected the vulnerable nutritional status of infants.

Table 9. Anemia Prevalence (%) in Children under 5 Years old in 2005, 2008, and 2009^a

Age(months)	General Rural			Poorer Rural		
	2005	2008	2009	2005	2008	2009
0-5	31.4	31.6	28.6	40.3	30.1	41.2
6-11	40.3	34.0	33.5	34.6	32.2	42.3
12-23	26.9	24.7	22.8	25.7	22.1	32.1
24-35	15.8	19.1	13.3	19.1	14.4	18.3
36-48	13.6	11.4	10.3	14.6	11.0	14.6
48-60	12.0	11.5	7.7	14.0	9.7	10.9
Total	21.1	19.8	16.7	21.6	19.9	22.0

Note. ^aAdjusted by local altitude.

Comparison of the Situation in Poorer Rural Areas in China from 2008 to 2010

The nutritional situation in 2005 can be used as a basis for comparison. Post-crisis data for poorer rural areas demonstrated a slight upward trend in the prevalence of stunting, which was 18.9% and 18.3% in 2008 and 2009, respectively, and 20.3% by 2010. In addition, the prevalence of underweight children increased from 6.1% in 2009 to 8.0% in 2010 (Figure 1). According to the age group data, even the prevalence of underweight children for all age groups under 5 years old in the poorer rural areas followed the upward trend during post-crisis 2010. The prevalence of stunting revealed evidence of the increasing trend in all age groups except children aged 0-5 months in 2010. Such data show that the nutritional losses experienced during the economic crisis were not recovered during the post-crisis period and the negative effects continued. The effect on children aged 24 months and older began to show, and at the beginning of the post-crisis period they returned to levels seen in 2005, despite a reduction in those figures in 2009 (Tables 10 and 11).

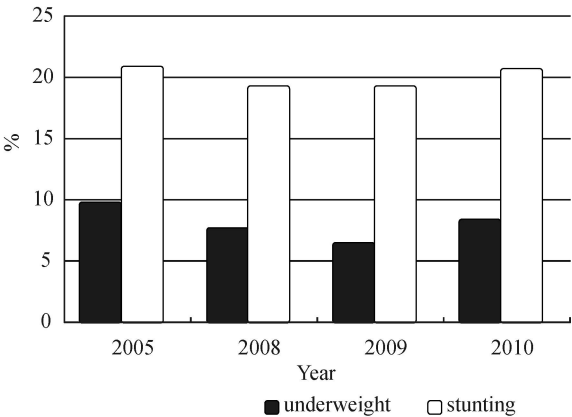


Figure 1. Underweight and stunting prevalence (%) in children from 2005 to 2010 in poorer rural areas, China.

Table 10. Underweight Prevalence (%) in Children from 2005 to 2010 in Poorer Rural Areas, China

Age Groups (Months)	2005	2008	2009	2010
0-	6.7	3.3	4.3	5.5
6-	5.2	5.5	5.8	6.7
12-	9.7	7.4	6.2	8.2
24-	8.9	7.3	6.6	7.6
36-	11.8	8.4	6.3	7.7
48-60	10.7	8.0	6.0	9.7
Total	9.5	7.3	6.1	8.0

Table 11. Stunting Prevalence (%) in Children from 2005 to 2010 in Poorer Rural Areas, China

Age Groups (Months)	2005	2008	2009	2010
0-	5.2	5.7	9.1	6.6
6-	13.1	6.7	12.5	12.1
12-	21.8	23.5	22.7	22.8
24-	23.5	22.0	20.4	22.5
36-	27.5	20.5	18.4	23.3
48-60	20.3	20.2	17.1	20.8
Total	20.9	18.9	18.3	20.3

The prevalence of anemia in children in all age groups in 2010 is shown in Table 12. These results demonstrate some reduction, mostly after 24 months old. Results for 6-24 months old show some fluctuation rather than a reduction trend as the distribution curve shows little change (Figure 2).

Table 12. Changes of Anemia Prevalence (%) in Children in Poorer Rural Areas, China

Age Groups (Months)	2005	2008	2009	2010
0-	40.3	30.1	41.2	21.6
6-	34.6	32.2	42.3	31.9
12-	25.7	22.1	32.1	20.5
24-	19.1	14.4	18.3	9.6
36-	14.6	11.0	14.6	7.6
48-60	14.0	9.7	10.9	7.9
Total	21.6	19.9	22.1	14.2

DISCUSSION

Despite China’s economy slowing down during the global economic crisis, it still maintained an 8% GDP increase in 2009, and 11.2% in 2010. Compared

with the data from the Chinese Food and Nutrition Surveillance in 2008, the nutritional status of children under 5 years old was comparatively stable, with no increase in undernutrition in 2009 in rural areas. However, in poorer rural areas, the stunting rates for infants under 12 months old rose from 5%-7% in 2008 to 9%-12% in 2009; anemia rates also increased. The negative nutritional impact of the economic crisis was not mitigated by the shift to the post-crisis period in 2010. Thus, in an economic crisis the levels of preparedness of the poorer rural areas and appropriate approaches must be considered in addition to the regular economic crisis response policies.

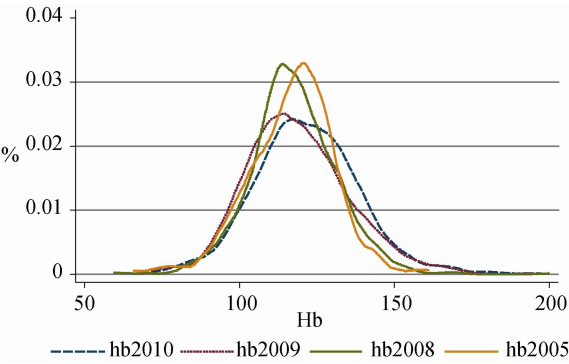


Figure 2. Hemoglobin distribution for children aged 6-24 months for 2005-2010 in poorer rural areas.

Based on a conceptual framework developed by UNICEF^[8] regarding the causes of malnutrition, we analyzed the factors attributed to the stability of the nutritional status of children and those that are responsible for the deterioration of child nutrition in poorer rural areas in China during the global economic crisis.

Agriculture policies implemented by the Chinese government, particularly production policies and the farmer-favorable policies implemented continuously over the last 20 years, have ensured the continuous growth of food production in the past 10 years, which guaranteed the food needs of the rural people. Efforts have been made as follows^[9]: (1) farmers have been exempt from agriculture tax since 2006, and a slaughtering tax, animal husbandry tax, and taxes on local specialties have also been phased out; (2) subsidies were instituted, including subsidies for grain cropping, cropping superior grain varieties, the purchase of farm machinery and tools, and facilities for agricultural production; (3) implementation of price protection of governmental grain purchases; (4)

establishment of policy-oriented agricultural insurance; and (5) a steady increase in the income of rural populations. The estimated increase in income attributable to the above mentioned subsidies policies is 401 Yuan RMB per person in rural areas^[10].

According to the self-reported income data from the Chinese Food and Nutrition Surveillance questionnaires, the income of rural households for all income groups increased in 2009. In addition, China has enjoyed good harvests over the past 5 years under its self-reliance principles, and food shortages were not a problem in 2008-2009. Therefore, in most areas, there was no increase in the number of undernourished children under 5 years old. An estimated 8 million children in China suffered from stunted growth in 2009.

China's policy response to the global economic crisis was to increase public investment to raise domestic demand. Thus, the livelihood of the people would be ensured and improved. During the crisis, both subsidies to farmers and the grain purchase price were further increased. The government also focused on agriculture production policies and combined social security and development policies. In addition, policies were initiated regarding incentives for the purchase of electronic appliances by rural households, and the Rural Cooperative Medical Scheme and the New Farmers' Social Security System were simultaneously established.

While the above approaches enabled farmers to weather the 2008-2009 crisis, the poor in rural China did not do so well. Data from the National Poverty Alleviation Office shows a J-shape curve representing the speed of poverty reduction. The annual reduction of poverty in the population over the past decade shows that there was a reduction of 10.95 million in 2004-2007, which is a reduction three times greater than that for 2000-2003 (3.02 million annual reduction). However, the rate of reduction slowed in 2008 and 2009, with poverty reductions of 3.13 million and 4.10 million, respectively, which marks a return to levels from 2002-2003^[11]. The results for 2004-2007 not only echo the dramatic improvement in nutrition for children in poorer rural areas since 2005, but they also explain in part the backward tendency seen in the prevalence of undernutrition in infants in 2008-2010. The rapid improvement in the nutrition of children under 12 months old reflects the stronger financial situation of households prior to 2008. The immediate increase in rates of stunting in this age group in 2009 further illustrates the high vulnerability of these children

during the global economic crisis, and the ongoing negative nutritional impact of the economic crisis seen in 2010 demonstrates that nutrition deterioration in young children is not immediately reversed once recovery occurs.

An analysis of China's agriculture sector confirms that land ownership/right of land use for farmers has remained a basic national policy over the last 60 years. Thus, even in the face of unemployment, families can grow their own food on their land and can guarantee food-security. In the short-term anyway, families can meet their dietary requirements. As farmers consume food predominantly from their own land, they were largely insulated from the global food crisis^[12].

Increases in food prices in China were mainly attributable to higher meat and edible oil prices, which differed from the global situation. With regard to bio-fuel production, the Chinese government announced that only non-food grains such as sorghum, cassava, and sweet potato could be used to produce ethanol. Thus, food prices did not fluctuate with bio-fuel production costs^[12], and the food-security of Chinese farmers was not immediately influenced by the global food price shocks of 2007-2008.

Since the initiation of the new Rural Cooperative Medical Scheme, the Chinese government has increased funding to the public health services from 10 Yuan RMB per person to 20 Yuan RMB per person. By 2010, 95% of farmers had joined the scheme. Thus, the issue of unaffordable medical treatment is gradually receding, which is also beneficial to the nutritional security of young children.

The number of women in poorer rural areas who migrate to find work in the cities and leave their infants behind has been increasing. In 2000, 5.8% of mothers of children under 5 years old in the surveillance sites became migrant workers, increasing to 10.1% in 2005, 15.2% in 2009, and 22.5% in 2010. However, the rate in 2010 was 29.6% in the poorer rural areas. The breastfeeding rate among migrant women with infants less than 6 months old was only 36.8%; for children aged 6-12 months the rate dropped to 10.5%. Low breastfeeding rates severely hinder a child's nutritional status. In addition, rural migrant women were away from home for long periods, with over 70% of migrant women in poorer rural areas away for more than 1 year. The lack of a mother's care is a major cause of undernutrition in children left by migrant working mothers.

In conclusion, with regard to child nutrition

during and after the global economic crisis, the effects of China's policy responses were basically positive and to some extent child health was protected. In addition to the regular policy responses, special nutrition security approaches concerning the rural poor should be included. Children under 2 years old are the most vulnerable of the population, and this investigation into beginning of the crisis recovery period in 2010 and the lasting nutritional effect on young children shows that the nutritional needs of children under 5 years old require greater attention.

It is worth mentioning that China has an extremely large population. The nutritional status of children in China has been significantly improved along with the rapid development of the economy. Such growth is evident in the success of the "three-dimension" rural strategy, which integrates agricultural production, rural community development, and the livelihood of farmers. Agriculture is now routinely the first priority of government in its annual planning meetings. Such integrated strategy has resulted in increased sustainable income and continuous improvements in rural children's nutrition.

However, the prevalence of stunting in children under 5 years old in China stood at 10.5% in 2008, (approximately 9.12 million children), with the number reducing to 8.82 million in 2010 (the 2010 National Census reported a total population of 1.34 billion in China; the estimated percentage of children under 5 years old was 6.58%, as reported in the 2009 UNICEF report^[4]). Thus, it is crucial that specific actions are undertaken to immediately improve the nutrition in poorer rural areas. Otherwise, children in those areas will miss important opportunities for growth development, and early losses in physical and intellectual development caused by the crisis will hinder their future capabilities, productivity, and health. "Catch the time" is a pertinent phrase for policy-makers in nutrition intervention.

The 2009 UNICEF report on the nutritional progress of children^[4] reported that there were still 195.1 million children under the age of 5 years suffering from undernutrition (stunting) in developing countries, with stunted children from just 24 counties accounting for 80% of all cases. The prevalence in India was 48%, accounting for 31.2% of the total number of children in developing countries. However, because of China's large population, even stunting rates dropped to 9.9% in 2010 (13% in 2005 reported by CFNSS); there are 8.82 million stunted

children in China, representing 4.45% of all cases in developing countries. We must take this problem seriously and undertake effective measures to combat the undernutrition of children in post-crisis China—all children deserve a healthy start to life, a precursor to a good life in the future.

The problem of hunger that arose from the global economic crisis was not only marked by energy deficiencies, but also, and largely, by micronutrient deficiencies because poorer people could not obtain food rich in micronutrients, such as vegetables, fruits, and meat. Our statistics show that the prevalence of anemia among children in poorer areas increased in 2008-2009. Despite a fall in the anemia rates in 2010, levels for children aged 6-24 months fluctuated, but did not reduce. Therefore, we suggest a proper national nutritional strategy for children under 2 years old, including the implementation of nutrition supplementation for pregnant women and in-home fortification for complementary feeding.

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