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Nutrition issues in disaster: evidence and actions in China

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Disaster Research Seminar Series
6 Mar 2014

Outline

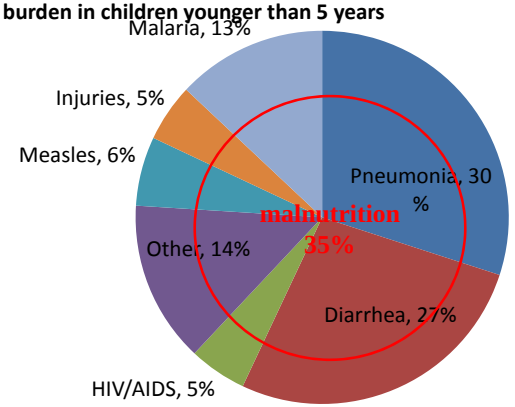
- Why care about nutrition in disaster
- Who are most vulnerable to malnutrition in disaster
- Common types of malnutrition
- Causes of malnutrition in disaster
- Evidences from China case study to disaster
- Response to nutrition issues in and after the disaster

Why care about nutrition in disaster?

- Mortality associated with malnutrition
- Frequently associated with disease epidemics
- Household access to food is often reduced

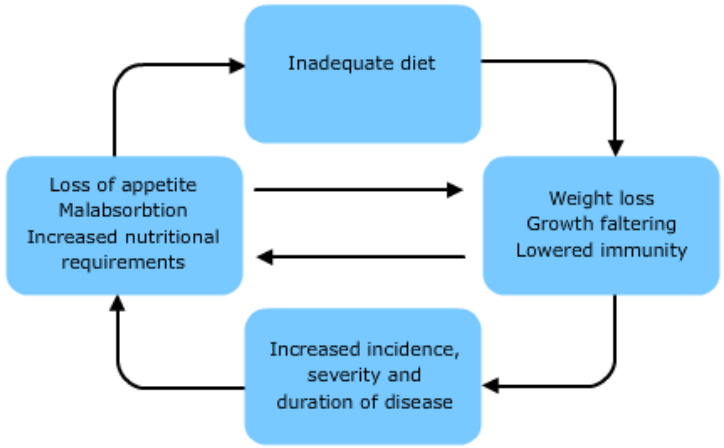
Mortality associated with malnutrition

Maternal and child undernutrition is the underlying cause of 3·5 million deaths annually, 35% of the disease burden in children younger than 5 years



Robert E Black , Lindsay H Allen , Zulfiqar A Bhutta ,et al. **Maternal and child undernutrition: global and regional exposures and health consequences.** The Lancet, Volume 371, Issue 9608, 2008, 243 - 260

Frequently associated with disease epidemics



Source: UNICEF

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Frequently associated with disease epidemics

Disease	Impact of undernutrition	Impact of infection with regards to nutrition
Diarrhoea (e.g. shigellosis)	• Increased duration • Increased severity • Increased mortality	• Malabsorbtion • Appetite loss • Loss of nutrients
Acute Respiratory Infection (lower tract)	• Increased severity • Increased mortality	• Appetite loss • Metabolic effects resulting in muscle breakdown
Measles	• Increased duration • Increased severity • Increased mortality	• Appetite loss • Decreased availability of Vitamin A • Reduced immune function • Fever • Muscle breakdown
Malaria	• Some evidence of increased severity in deficiencies of Vitamin A and Zinc	• Iron deficiency leading to anaemia • Impaired foetal development, low birth weight and growth faltering

Source: UNICEF

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Household access to food is often reduced

- In emergencies, the ways in which people access food is often disrupted, especially if they have to leave their homes due to disasters. Additionally, crops and food stocks are often destroyed in emergencies.

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Who are most vulnerable to malnutrition in disaster?

Groups vulnerable to malnutrition in emergencies often include:

☹ Infants and children

☹ Pregnant and lactating women

☹ Older people, the disabled, people with chronic illness

☹ Geographical vulnerability populations

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Common types of malnutrition

malnutrition			
Growth failure	**At risk groups**	**Micronutrient malnutrition**	**At risk groups**
Acute malnutrition —Wasting	Children under 5 years	Vitamin A deficiency	Children under 5 years, school age children, pregnant women
Chronic malnutrition —Stunting		Vitamin D deficiency	Infants, adolescents, pregnant and lactating women, elders
Acute and/or chronic malnutrition —Underweight		Iron deficiency	children, Pregnant women, elders
		Zinc deficiency……	Infants, children, adolescents, pregnant and lactating women, elders

Causes of malnutrition in disaster

- Immediate causes: inadequate dietary intake, disease.
- Underlying causes: household food insecurity, inadequate care, unhealthy household environment and lack of health services
- Basic causes: lack of human, financial, structural resources in certain political and cultural context.

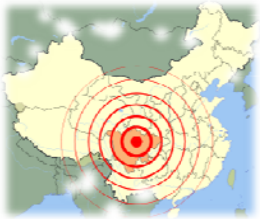
Causes of malnutrition in disaster

Risk factors for micronutrient deficiencies in emergencies

- Total dependence on the food ration
- Lack of vegetables and fruit in the local market or lack of resources to trade for other food sources
- No access to land for cultivation
- Malnutrition prevalent in affected population before the emergency
- High prevalence of infectious diseases
- Low rates of optimal infant and young child feeding

Evidences from China case study to disaster

Overview of the Sichuan earthquake



Date: 14:28 on May12, 2008

Magnitude: 8.0 on the Richter Scale

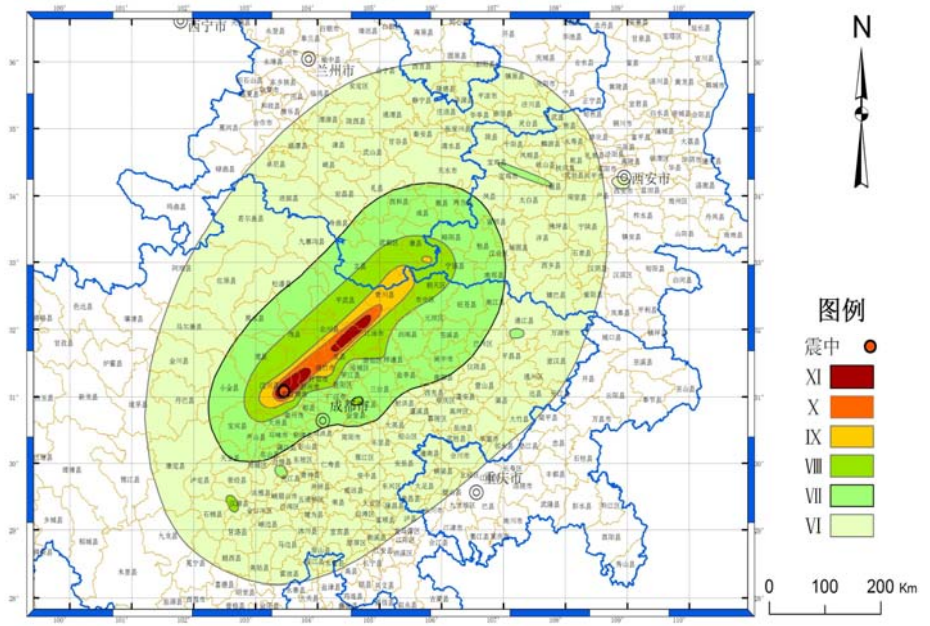
Area of Damage: Over 100,000 km^2

across Sichuan, Gansu and Shaanxi provinces

Direct economic loss: RMB 845.14 billion

Casualties: 69227dead, 374643injured, 17923missing

The most powerful earthquake since the establishment of the People's Republic of China in 1949.



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General food environment after the earthquake

- Less provision of animal-source foods.
- Limited food choices, especially high-quality foods.
- Common dietary pattern includes just cereals and vegetables.
- Mainly rely on food aids in the first weeks.
- Disrupted local food trades and increased food price.

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Food environment varied among counties

Jun-Aug, 2008

Maoxian: Most families cook in their homes on daytime and slept in settlements at night. No collective feeding. Less concentration on nutrition and hygiene. One pica case was found, which indicated a child eating stones.

Mianzhu and Lixian: Canteens and self-catering kitchens were provided in settlements. Better hygiene situation.

Wudu and Kangxian: Most affected people moved back to their own homes. No large-scale settlements and collective feeding. Worse living situation and diet quality.

nutritional problems 3 months after the earthquake (1)

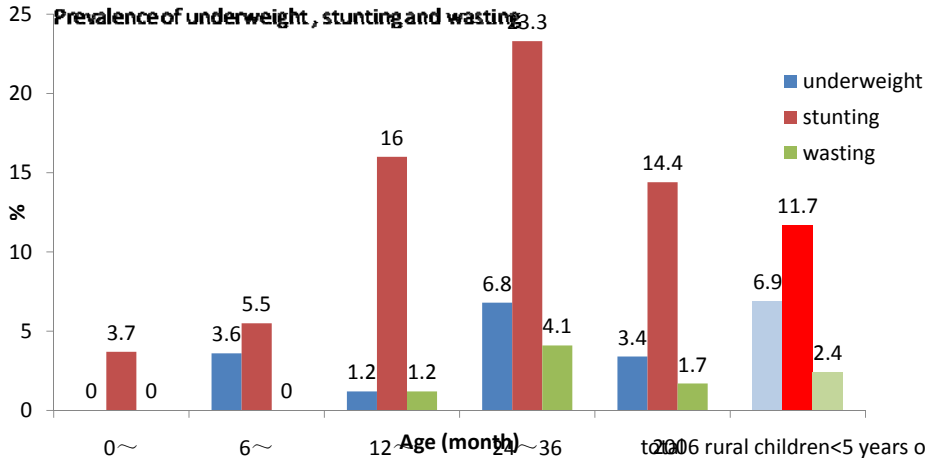
- A typical survey conducted by China CDC
- Period: Jun-Aug, 2008
- Location:

  Lixian, Maoxian, Mianzhu (Sichuan Province)

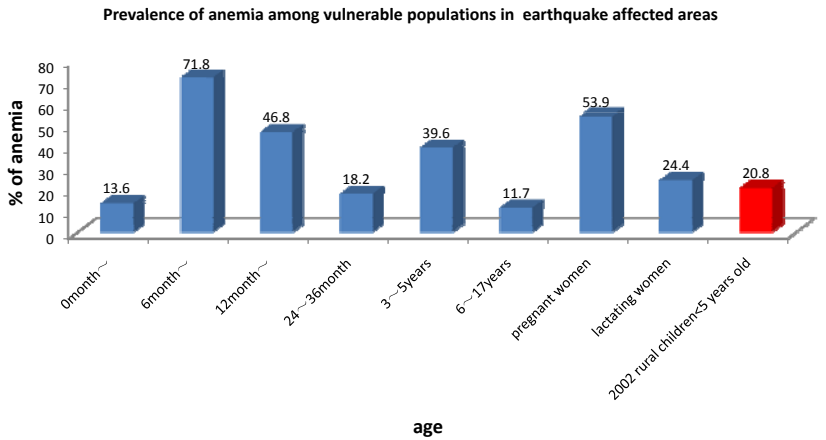
  Kangxian, Wudu (Gansu Province)
- Population:756 persons in total

  including infants, children, pregnant and lactating women.
- Method: questionnaire survey, anthropometry (height/length, weight), hemoglobin testing(343/756)

nutritional problems 3 months after the earthquake (2)



nutritional problems 3 months after the earthquake(3)



nutritional problems 3 months after the earthquake(4)

Breastfeeding:

Infants:

- Exclusive breastfeeding: 70.4%

Children (aged 6months-3years):

- Average breastfeeding period: 4-8 months
- Only 33% children still have breastfeeding.

Lactating women:

- Insufficient secretion of breast-milk: 40.3%
- Lack of health services and instructions: 77.8%

nutritional problems 3 months after the earthquake(5)

Complementary feeding:

Children (aged 6months-2years):

- 27.4% of families reported they cannot afford complementary feeding.
- 72.6% of children had same diets with adults, without appropriate complementary feeding.

nutritional problems 1 year after the earthquake (1)

Sample: 242 reproductive women in 3 affected counties(pengzhou, kangxian, ningqiang)

Period: mid-Apr, 2009

Results:

- lower intakes of meat and poultry;
- Vitamin A deficiency and marginal deficiency prevalence: 6.9% and 18.2%;
- Vitamin D deficiency and insufficiency : 93.9%;
- Prevalence of anemia and iron deficiency: 32.6% and 51.0%;
- Vitamin B_{12} deficiency and marginal deficiency prevalence: 22.7% and 11.4%
- Zinc deficiency: 61.6%;

Reference: Yin SA, Zhao XF, Zhao LY, et al. The nutritional status of reproductive women at one year after the disaster of earthquake in Wenchuan. Chin J Prev Med. 2010, 44(8):686-690.

nutritional problems 1 year after the earthquake(2)

Sample: 466 children under 5 years old in 3 affected counties

Period: mid-Apr, 2009

Results:

- The exclusive breast feeding rate(infants under 6 months): 58.8%;
- Vitamin A deficiency and marginal deficiency prevalence: 15.4% and 30.3%;
- Deficiency and insufficiency of Vitamin D: 92.0%;
- Prevalence of anemia of 2-23months and 24-59months children: 47.5% and 21.5%;
- Prevalence of iron and zinc deficiency: 45.7% and 65.5%;
- Stunting prevalence among 24-59 months children: 13.6%.

Zhao XF, Yin SA, Zhao LY, et al. The nutritional status among children under 60 months year-old after one year of the Earthquake in Wenchuan. Chin J Prev Med, 2010, 44(8): 691-695.

Response to the nutrition issues in and after the disaster?

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Types of nutrition-related response

Food response

- General food ration distribution
- Emergency school feeding
- Food for work
- Supplementary feeding
- Therapeutic care

Non food response

- Livelihood support
- Infant and young child feeding support
- Health, water and sanitation support

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Recommendation in SPHERE Standard

- Standard 1: food security and nutrition

  Where people are at increased risk of food insecurity, assessments are conducted using accepted methods to understand the type, degree and extent of food insecurity, to indentify those most affected and to define the most appropriate response.
- Standard 2: infant and young child feeding

  Safe and appropriate infant and young child feeding for the population is protected through implementation of key policy guidance and strong coordination.

  Mothers and caregivers of infants and young children have access to timely and appropriate feeding support that minimizes risks and optimizes nutrition, health and survival outcomes.
- Standard 3: food transfer

  General nutrition requirements; appropriateness and acceptability; food use; cash and voucher transfers; livelihoods(primary production, income and employment, access to markets)

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Response to nutrition issues in Wenchuan Earthquake

What we have done

- General food ration was provided by **governments**, with 0.5kg cereals and RMB10 /person/day for 3 months.
- Halal foods for Hui minority populations (governments, organizations, industries, mass media)
- Re-establishing Maternal and Child Health Services(UNICEF)
- Supply nutrition commodities, including micronutrient supplements, vitamin A capsules,and prenatal vitamin and mineral supplements for children and women(UNICEF)
- Health education (CDC,UNICEF, NGOs)
- Filed assessment and study (CDC)
- Nutrition in emergency training workshop in 2009(CDC)
- Policies and guidelines

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What we have done

- Policies and guidelines:

1. Chinese government decided to make May 12 "Disaster Prevention and Reduction Day," starting in 2009
2. Provide micronutrient supplements to children aged 6-24 months in 100 poverty counties from 10 provinces, covering 280,000 children, since 2012.
3. The State Council issued regulations on implementation of nutrition programs in rural compulsory education schools (2011): including nutrition monitoring, education and intervention among school-age children, providing 3 Yuan/student/day financial subsidy for school meals, covering 26 million students in 680 counties.
4. Guidelines of nutrition security in emergency (2013)

Distribution of micronutrients sprinkles to 6-24 months children in Sichuan, Gansu, and Shanxi to improve nutrition status after earthquake.

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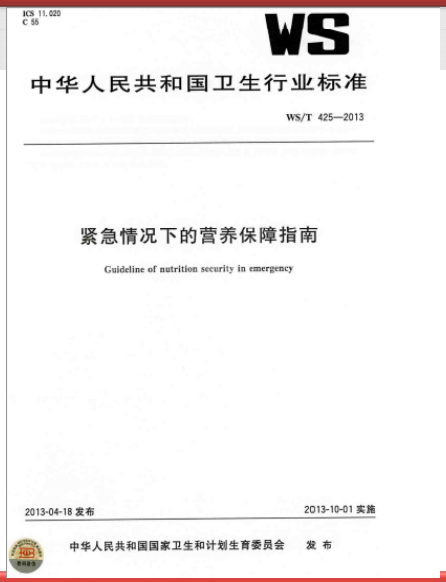

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中华人民共和国卫生行业标准

WS/T 425—2013

紧急情况下的营养保障指南

Guideline of nutrition security in emergency

2013-04-18 发布　　2013-10-01 实施

中华人民共和国国家卫生和计划生育委员会　发布

Free full text is available :
http://wsbzw.wsjdzx.gov.cn/wsbzw/bzcx/bzcx.jsp

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Response to nutrition issues in Wenchuan Earthquake

What we did not do

- Little focus on nutrition issues among other vulnerable populations, such as older people or those with HIV, TB or other chronic conditions in disaster.
- Have not taken nutrition issues as priorities in disaster relief, such as lack of policy support in government's regulation on disaster preparation and response
- Lack of rapid nutrition assessment in the first stage of response to provide evidences for food aids and initiatives
- Lack of health education on nutrition-related disaster preparation skills among disaster prone populations, especially breastfeeding and complementary feeding.

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Summary

- Disasters increase the risk of malnutrition in a population.
- Infants and children, pregnant and lactating women, elders, disabled and people with chronic diseases are common vulnerable populations in disasters.
- Major types of malnutrition include growth failure and micronutrient deficiency in disasters.
- Evidence-based nutrition-related responses and policy supports are needed in China.
- More attention should be taken on other vulnerable populations, who used to be ignored, such as elders and people with chronic diseases.

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THANK YOU!