



Community Prevention of Nutritional Disease in China

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REVIEW

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The development of urbanization and economic growth in China

In 2005 the population of China's 31 provinces and autonomous regions numbered 1.30628 billion. From 1949 to 1978, 30 years, under the system of planned economy, the level of urbanization increased from 10.64 % to 17.38%. After the policy of reform and opening-up, in 1978, urbanization increased more rapidly. Over the next 30 years the level of urbanization of whole country has increased 28.3 % to 45.68%. (See Graph 1) Continuing this trend, many organizations and scholars predict that 65% of the population will be urban by 2030. From 1980 to 2000, the GDP of China grew at the rate of 8% per year. The average income of residents in China increased twenty times during the 20 years. The percentage of poorest decreased from more than 20% in 1978 to less than 5% in 1999. Meanwhile, the population whose average income is lower than \$ 1 per day also declined from 80% to 12%.¹ Along with the development of economy, there have been cultural and educational changes. This article will focus on those related to nutrition.

The characteristics and changes to dietary patterns in China

Immediately after the founding of the People's Republic of China, people's dietary pattern was typically "eastern

style", predominantly plant based with animal food sources as supplements. The specific characteristic of this style is that the consumption of cereal is about 550g per day, while the animal food only 50g per day or less. The calories supplied by plant food account for almost 90% of the total. The average ingestion of energy is about 8,368KJ to 10042KJ, including about 50g of protein and only 40g of fat. Dietary fibre is adequate while elements derived from animal food such as iron, calcium and Vitamin are insufficient.

However, post-1978 changes emerged in the dietary pattern. Consumption of cereals decreased every year, while the amount of animal products consumed increased several times. As a result, the proportion of carbohydrate in the diet decreased as the proportion of fat increased. This switch has two consequences, one beneficial, through improving the quality of protein in the diet, one detrimental, through surplus of fat and calories contributing to the development of chronic diseases. This is illustrated by survey data of Chinese residents' nutrient and health condition taken in 1982, 1992 and 2002.

Cereal

The consumption and relative energy supply of cereals decreased year by year. The average cereal-consumption of Chinese residents per capita per day was approximately 498g in 1982, 440g in 1992, and 402g in 2002.² The average percentage of calories supplied by cereals declined from 71.3% in 1982, to 66.8% in 1992, then down to 57.9% in 2002, close to the confine of 55%~65% suggested by the World Health Organisation (WHO).³ Moreover, this trend is exaggerated in urban residents' diet, where carbohydrate intake is as low as 48%.



Protein

The total consumption of protein stayed at the same level, while the proportion of optimized protein increased. The average protein-ingestion of Chinese residents per capita per day was 66.7g in 1982, 68g in 1992, and 66.1g in 2002.³ The percentage of energy provided by protein stayed at about 11.8%, which is in the ideal range. However, the average consumption of animal food per capita per day grew from approximately 68g in 1982 to 116g in 1992, then up to about 187g in 2002. Optimistically, although the total ingestion of protein stayed unchanged, the proportion of quality protein ingested by both urban and rural residents considerably increased, along with the growing of consumption of animal food.

Fat

The ingestion and relative energy supply of fat increased dramatically. The average fat-ingestion of Chinese residents per capita per day was 48.1g in 1982, 58.3g in 1992, and 76.2g in 2002.³ In 2002; the average percentage of energy supplied by fat was 29.6%, which had increased by 8% compared to 1992 figures. In urban residents' diet, the percentage was 35%, which is higher than the suggested standard 30% provided by WHO.⁴ (Graph 2)

Energy

The total ingestion of energy decreased. The average energy-ingestion of Chinese residents per capita per day was 2491.3kcal, 2328.3kcal and 2250.5kcal in 1982, 1992 and 2002, respectively.³ But it could basically satisfy the needs per day, consistent with a country in economic transition. However partly due to the large population China has one of the largest proportions of malnourished people. Nutrition in China is suffering from both insufficiency of nutrition, which exists mainly in developing countries, and disequilibrium of dietary components, which is also a feature of diets in developed countries.

Two kinds of malnutrition co-exist. The dual problem of insufficiency and dietary imbalance is one of the most challenging to date. As both types of problem are present in both urban and rural settings. Thus the chronic diseases caused by disequilibrium of nutrition, which were often called the affluent disease, are no longer exclusive to urban residents.⁵

The rapid increase of chronic-disease cases in both town and country must be tackled. In both town and country in China, the chronic non-contagious diseases, partially attributable to nutritional problems, are a serious threat to residents'

health and lives. Meanwhile, this problem will certainly inhibit economic construction and development of society. Notable characteristics of the chronic diseases is the large burden or morbidity, rapid onset and now relatively small differences in incidence between town and country dwellers.⁵

People lack knowledge about Nutritional Sciences and the insufficient guidance from government. Chinese cooking has enjoyed a worldwide reputation for fresh ingredients, processing, and culinary techniques. However health considerations seldom feature in the diet of Chinese people. It is important to nurture this consciousness and the desire to adopt healthy eating in order to trigger an improvement in people's dietary habits. Moreover, China currently lacks legislation on nutrition or government guidelines.

The diseases related to nutrition of Chinese people

High-energy and high fat diet associated with a lack of physical activity are directly associated with obesity, diabetes and dyslipidemia; high-salt diet is closely related to the risk hypertension. The daily ingestion of salt was 12g in 2002, twice the recommended amount. 80% of Chinese people ingested more than the recommended salt intake per day, and 58% residents' ate more cooking oil than recommended.

1. Hypertension

The prevalence of hypertension of the residents who were 18 years old or more 18.8% in 2002, and the estimated number of people with hypertension across the whole country was therefore about 160 million. Compared to the previous decade the prevalence rate rose by 31%. There was a particularly rapid rise in the prevalence in rural areas, and the gap between the urban area and the rural area was negligible. The prevalence of hypertension in metropolitan areas was 20.4%; small and medium-sized cities' was 18.8%; rural areas was almost 20.0%.³

2. Diabetes

The prevalence of diabetes of the residents who were 18 years old or more was 2.6% in 2002, and the rate of impaired fasting glucose (IFG) was 1.9%. The estimate of the number of people with diabetes was about 20 million, and the number of the persons who diagnosed IFG was near 20 million. The prevalence in urban area was apparently higher than rural areas. Compared



with 1996 the prevalence of diabetes of the residents who were 20 years old and over in metropolitan areas climbed from 4.6% to 6.4%, and the rate in small and medium-sized cities increased from 3.4% to 3.9%.⁶

3. Dyslipidemia

The prevalence of dyslipidemia of the adults in China was 18.6% in 2002, and the estimate of the number of people with dyslipidaemia was estimated at 160 million. The prevalence of different types of dyslipidemia were: 2.9% hypercholesterolemia, 11.9% hypertriglyceridemia, 7.4% low high-density lipoprotein hyperlipidemia, and 3.9% marginal increase in cholesterol. The prevalence of dyslipidemia in the elderly was similar, and there was little difference between urban and rural areas.⁶

4. Overweight

The prevalence of overweight adults in China was 22.8% in 2002, while the rate of obesity was 7.1%, and the estimates of the number of people who were overweight or obese were 200 million and 60 million respectively. The prevalence of overweight adults in metropolitan areas reached up to 30.0%, while the rate of obesity rose to 12.3%, especially in children. Compared with the data of nutritional survey of whole country in 1992, the prevalence of overweight adults increased 39%, and the prevalence of obesity grew a worrying 97%.⁷

The primary care and community prevention of nutritional diseases in Chinese people

The goal of developing community health care and primary health care is identical, that is to realize the global strategic target of the "health for all". The basic principle of primary care is to distribute health resources reasonably, encourage the whole society to participate, to consider prevention first, adopt healthy habits and make use of community resources. In society, about 80% of the health problems require community health care to solve. Therefore, it is only if we develop 'community health care' can we provide effective primary health care. We should promote primary health care based in the community, in the same way, improving the nutritional health of Chinese people should also based in the community.

1. The Chinese definition of community health care

Because of the different national conditions, the understanding and appreciation of community health care is diverse. The focal point is women, children, the old, patients with chronic diseases and the disabled, the goal is to solve the main health problems and satisfy the needs of basic health service, including prevention, medical treatment, health care, rehabilitation, health education and family planning.

We can consider the development of China's Community Health care in three stages. The first was the 'enlightening' stage, from the early 80s to the early 90s. The main work was to introduce and publicize the concept of the health service and reflect on the situation of other countries. The second was the 'exploration' stage, through the 90s. At this the local government took the initiative and the health agencies carried out pilot work. The pilot work included examining, studying and imitating the experience from abroad. The third is the 'executive' stage, from late 90s to press; China will implement community health care across the country. The related infrastructure has been introduced step by step, accelerating as the process continues. However, the community in China is short of professionals in nutritional sciences, leading to problems carrying out some policies promoting the nutritional health of residents. The trend of Chinese community nutrition is that every community should have a nutritionist, and build a nutritional file for all the residents, and eventually promote the health for the whole community.⁸

The objective of community nutrition is to enhance the nutritional knowledge of people, improve the diet pattern and promote health by means of nutritional survey, nutritional intervention and nutrition education. Since community health care is a kind of primary care dominated by the government, strengthening the guidance is the key factor to promote the community prevention of the nutritional diseases. Therefore, the government must reinforce the centralized guidance, make and improve the laws for national nutrition.

China carried out three national nutritional surveys in 1958, 1982 and 1992 and an investigation of nutrition and the health situation of Chinese residents in 2002. The results suggested that the government could do more to promote health.

In addition, strengthening nutrition education, advocating balanced diet and health life style, promoting moderation will help relieve the growing burden of chronic diseases associated with nutrition imbalance. Improving the professional knowledge of the nutrition professionals will allow health care experts to provide more efficient guidance to the population to improve overall health.⁹



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CONFLICTS OF INTEREST

The authors declare that they have no competing interests.



Graph1: Urbanization level in China, 1949-2007

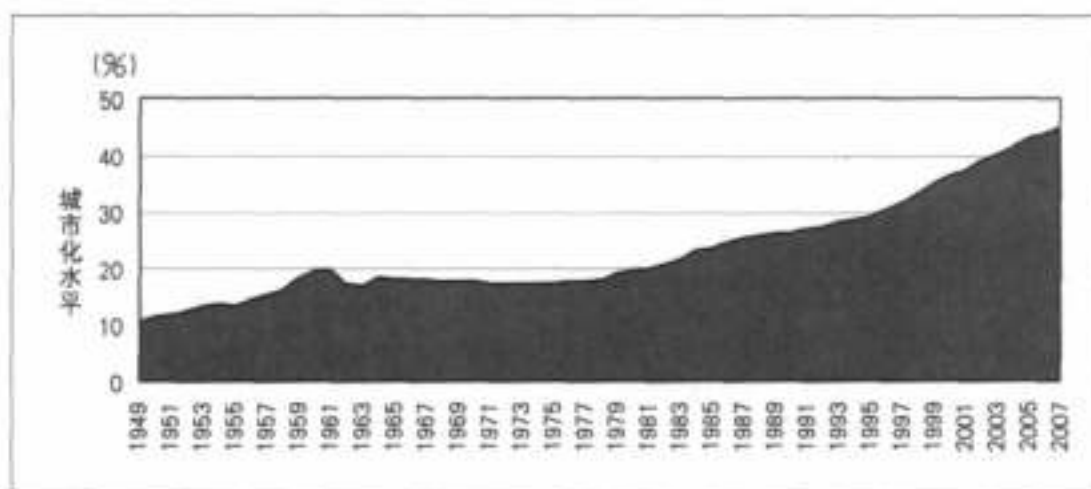


图1 中国城市化水平：1949-2007 年

Fig.1 Urbanization level in China, 1949-2007

资料来源：参考文献11、13。

Graph2: The average consumption of cereal, fat and protein of Chinese residents per capita per day in 1982, 1992, 2002 (g)

