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China briefings
Health transformations: nutrition and diet

Photo:
Street food,
Kashgar, Xinjiang

Keith Tan
via Flickr

Summary

China's major policy challenge in nutrition and public health is to simultaneously battle the growing problems of overconsumption, obesity and associated chronic diseases while continuing to tackle the hunger and malnutrition which is still prevalent among a significant minorit . Since many environmental and health problems are linked, there is scope for policymakers to develop health policies that integrate and synergise with environmental objectives.

The health of China's population has improved enormously over the past two decades. Life expectancy (76 years) is above the global average and reductions in child mortality and infectious diseases have been significant. H wever, China is faced with a growing prevalence of non-communicable diseases that are closely linked with diet, lifestyle and societal changes. Overall food energy intakes have declined as urbanisation and industrialisation have given rise to more sedentary lifestyles, but this decline is less than the decline in energy *requirements*. The proportion of China's population that is overweight or obese is therefore rising, as is the prevalence of diabetes. Population ageing is raising new health challenges – for example, the prevalence of osteoporosis (bone thinning and associated fractures) is set to climb steadily. Meanwhile, 6–8% of the population still experiences hunger and malnutrition.

CHINA BRIEFINGS
OVERVIEW OF CHANGES AND DRIVERS IN CHINA'S FOOD SYSTEM

May 2015

Written by Huw Pohlner based on Garnett, T. and Wilkes, A. (2014) *Appetite for change: Social, economic and environmental transformations in China's food system.*

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Diets and dietary change in China

Food consumption patterns

- Per capita consumption of animal products (meat, eggs, dairy, and aquatic products), oils and animal fats, sugars, processed foods, soy products, fruits and alcohol has increased over the past 35 years; per capita consumption of grains, tubers, vegetables and legumes has declined.
    - Dramatic growth in production of horticultural products has led to little increase in domestic consumption.
    - Demand for meat and dairy products is growing especially rapidly and is linked to rising obesity and environmental problems.
    - Consumption of animal products fluctu tes in response to price changes and food safety concerns.
- Domestic food prices in China have increased since the 1990s, but by less than income rises overall – strong government policies have limited the impacts of short-term price volatility on consumption and nutrition.
- Wealthier urban populations consume more of everything than rural residents though this gap is expected to close in coming decades; high-income rural residents consume in ways similar to their urban counterparts.
- Diets vary considerably across China and are influen ed by a range of factors, including geography, climate, income, and culture.

Data sources on food consumption in China

China's changing consumption patterns have been monitored since 1989 through the longitudinal China Health and Nutrition Survey (CHNS) – www.cpc.unc.edu. The CHNS asks respondents to report what they actually consume, whereas official Chinese tatistics are based on surveys of household food purchases (i.e. not including eating out). The official dataset is also relevant from an environmental perspective as it captures the full impact of food production (including food that is eventually wasted). However, the CHNS is more accurate when it comes to ascertaining the relationship between diet and health outcomes.

Nutrient intakes

- *Overall* food energy intakes have declined as urbanisation and industrialisation have given rise to more sedentary lifestyles, but this decline is less than the decline in energy requirements.
- Data from the CHNS shows that daily fat intakes have increased from 1991-2009, and these increases are highest among low-income urban groups and high-income rural groups.

The percentage of energy derived from animal products have grown to 13.5–19.9% of energy intakes (in 2011). Protein foods of all kinds also account for an increased percentage of total energy intakes.

Calcium intakes have increased to 400 mg per day for men and 353 mg per day for women (in 2006), still well below the Chinese recommended intake level of 800–1000 mg per day.

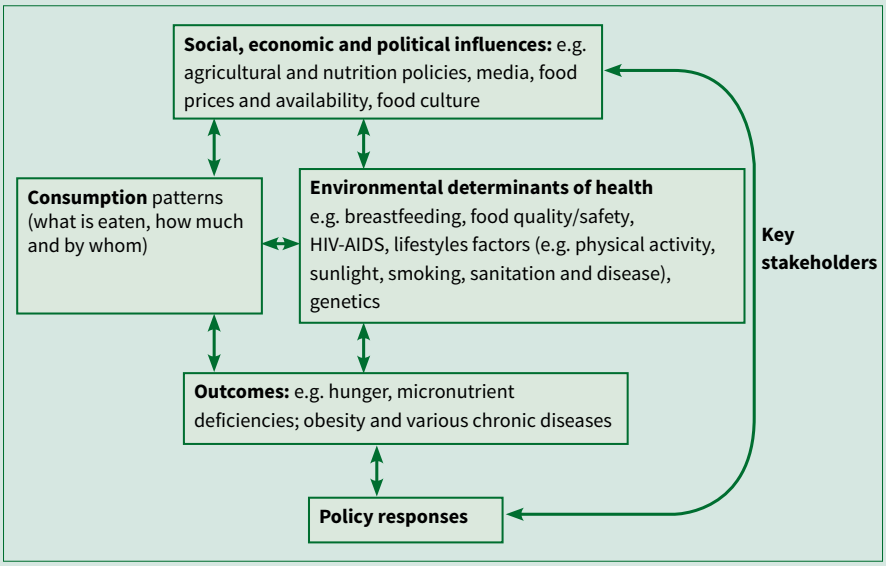
- The proportion of children consuming more than the maximum recommended 30% of energy from fat increased from 20% to nearly 50% during this time. The corresponding figu e for Chinese adults is roughly the same. Urban residents derive more energy from fats (62%) than rural residents (45%).

Nutrition-related health trends and impacts

Influen es on nutrition-related health status

This figu e illustrates how the health impacts of consumption patterns are influen ed by several factors. These include: levels of economic development, agricultural policy, pricing strategies, changes in how food is produced and distributed, marketing and media, values and aspirations, nutritional knowledge and access to information, and traditional attitudes to food and health. The role of policy is crucial – it shapes the overarching social, infrastructural and economic influen es on consumption and the extent to which health consequences are addressed.

Figure 25: Influences on nutrition-related health outcomes



Source: This study

For a more detailed discussion, see the original report here.

Hunger and malnutrition

- One of the most significant onsequences of China's development efforts over recent decades has been a huge reduction in hunger and malnutrition.
- Nevertheless, deficiencies in mic onutrients (e.g. iron and vitamin A) are widespread in some poor rural areas, and childhood stunting (caused by chronic food insufficienci) and wasting (caused by acute episodes of deprivation) persist.
    - An estimated 6.5 million children under fi e years old were stunted in 2010. However, the proportion of children stunted has declined, from around 33% in 1990 to 10% in 2010.

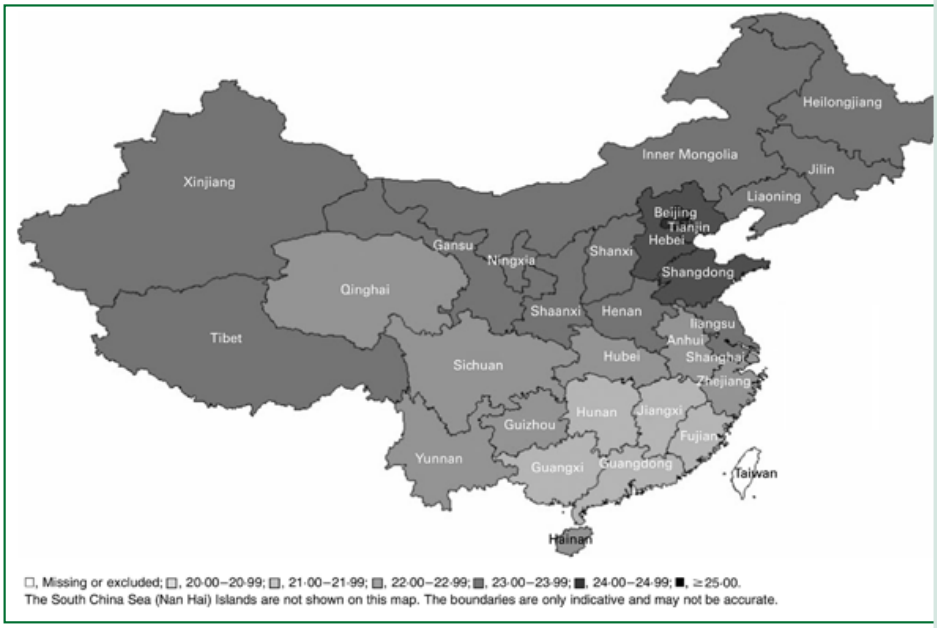
90-130 million poor people in China (6-8% of the population) are still food insecure and at risk of, or suffering from, malnutrition.

- Efforts to tackle nutrient deficiencies h ve included fortific tion of soy sauce to address iron deficien y. This program was rolled out nationally in 2007 and more than 60 million people were consuming fortified s y sauce by 2012, with proven reductions in anaemia.

Obesity and chronic diseases, and bone health

- Dietary risks are the leading risk factor for premature death in China.
- The growth in childhood obesity is a particular concern: around 13% of 7-18 year olds were overweight or obese in 2009 and roughly the same proportion is prediabetic.
- Overweight and obesity-related chronic disease are costly, and already accounted for 3.7% of Chinese national medical costs in 2003, greater than the proportion of total costs in both Australia and Canada.
- People in northern regions tend to have higher body mass index (BMI) and are more likely to be overweight than the national average (Figure 26).

Figure 26: Geographical distribution of the prevalence of overweight in China



Source: Zhuo Q, Wang Z, Piao J, Ma G, Zhai F, He Y and Yang X. (2009). Geographic variation in the prevalence of overweight and economic status in Chinese adults. British Journal of Nutrition, (102): 413–418.

For a more detailed discussion, see the original report here.

- Evidence suggests that people who were infants or in-utero during the famine of the late 1950s to early 1960s are at greater risk from diabetes, obesity and hypertension today – a phenomenon known as the 'fat-thin syndrome'.

Drivers and shaping influen es

- **Urbanisation** has influen ed both consumption patterns and energy requirements, as average weekly physical activity declined by 32% between 1991 and 2006.

Osteoporosis prevalence in women over 50 years old was 30.8% in 2006 and 8.8% for men; it is estimated that 286.6 million Chinese will suffer from osteoporosis or osteopenia by 2020 and 533.3 million by 2050.

In 2012, about 28.5% of men and 25.5% of women in China were overweight or obese; the prevalence of abdominal obesity (associated with higher cardiovascular risk) is similar in men but is over 45% in women. Around 10% of China's population suffers from diabetes and a further 15.5% are prediabetic. Over 60% of diabetes cases go undiagnosed.

- **Population ageing** has increased bone-related disease risks and will require greater investments in systems to prevent and treat a range of diet-related non-communicable diseases.
- **The one-child policy** may be contributing to increases in childhood overweight and obesity (as most parents have only one child to feed and may be more likely to 'spoil' them) but it is not clear that this factor is more important than other social and economic influen es.
- **Social attitudes** toward body weight, alcohol consumption and dietary norms are likely to impact consumption behaviours and health outcomes but evidence is limited and speculative.
- **Supply chain transformations**, supported by government policy, have increased the availability of a wide variety of foods.
- **Food advertising** is (as elsewhere) dominated by high-energy, low-nutrition foods for children, and current regulations are weak, although the issue has begun to be discussed publicly.
- **Nutrition policies** were initially focused on securing 'enough food' (Food Structure Reform and Development Masterplan for the 1990s), then on providing safe and nutritious 'quality' food (2001-2010 China Food and Nutrition Development Plan – see Table 5), and more recently, nutrition policies have started to address chronic diseases. (Twelfth Five-Year Plan for Control of Chronic Disease).
    - Two underpinning policy perspectives have strongly influen ed agricultural policy and support for processed foods over recent decades: a recognition that production, consumption and supply chain policies need to be integrated, and a focus on hunger and micronutrient deficiencies

Table 5: Daily nutrient intake targets set out in *2001-2010 China Food and Nutrition Development Plan* (2001) and progress towards achieving them

	Target by 2010	Actual, 2009	Comments
Energy	2300kcal of which 80% to come from plant foods	Men: 2456kcal/day Women: 2040.9kcal/day Animal food accounts for 13.5-19.9% of energy intake[1]	Average physical activity levels have declined, reducing energy requirements. Animal food levels exceeded among high consumers
Protein	77g of which 30% from animal protein	Average of 15% of energy intake now comes from protein. Using energy intakes in row 1 above, this equates to 92g protein for men and 76.5g for women. On average 30% of protein is derived from animal sources, but 20% for low income consumers.[2] Protein intakes average 66.7g, of which 48.6% from 'high quality' sources (mainly meat) in urban areas, and 44.5%, 39% and 29.1% of intakes in suburbs, towns and rural areas[3]	Generally met or exceeded
Fat	25% of gross energy (@70g)	Average now 31.4%; urban: 36%; rural: 29%	Exceeded
Calcium	580mg (China Nutrition Society recommends 800-1000mg)[4]	400mg for men and 353mg for women 72-88% of elderly Chinese citizens consumed less than half recommended intakes[5]	Not met
Iron	23mg	National data not available	

[1] Zhang B, Wang H, Du W, Zhang J, Chang S and Zhai F. (2011). The trends of nutrients intake of Chinese residents in nine provinces from 1989 to 2009. *Acta Nutrimenta Sinica*, (33)3 (in Chinese).
[2] Zhang B, Wang H, Wang Z, Zhang J, Du W, Su C, Zhang J and Zhai F. (2011). Change trends in dietary protein intake by adults in China and its impact on high blood pressure. *China Health Standards Management*, (2)4: 63-64 (in Chinese).
[3] Wang Z, Zhang B, Wang H, Zhang J, Du W, Chang S, Zhang J and Zhai F. (2012). Dynamic changing trend in dietary protein intake among Chinese adults aged 18 to 45 years in 1989-2009. *Chinese Preventive Medicine*, (13)11 (in Chinese).
[4] China Nutrition Society. (2006). *Recommended Dietary Nutrition Intake Levels for Residents of China*. Beijing: China Nutrition Society.
[5] Zhang J, Wang H, Wang Z, Zhang J, Du W, Su C, Zhai F and Zhang B. (2012). Trend in dietary calcium intake among Chinese elderly aged 50 years and over in nine provinces, from 1991 to 2009. *Chinese Journal of Epidemiology*, (33)11: 1119-1122.

For a more detailed discussion, see the original report here.

Future challenges

- China is faced with the tasks of ensuring that the food insecure have access to more and better food, while simultaneously addressing problems of overconsumption affecting increasing numbers of people.
- Generally sedentary lifestyles and an ageing population exacerbate the growing burden of disease caused by unhealthy dietary patterns.
- China, like many wealthy or industrialised economies, is faced with the difficulty of eining in excessive, unhealthy and resource-intensive consumption in the absence of simple technological solutions.
- Rising meat consumption is linked not only to health problems but also to growing environmental concerns resulting from livestock production. Healthier dietary patterns can therefore also be compatible with lower environmental impacts; such diets tend to be predominantly plant-based with small to modest quantities of animal products.

Diet-related health consequences carry economic costs. In 2003, 3.7% of total national medical costs were attributable to overweight and obesity; this proportion is likely to have risen since then but is already greater as a percentage of total health expenditure than in Australia and Canada.

Policy implications

1. Policymakers in China must contend with the increasing prevalence of lifestyle-related diseases affecting both the rich and poor – a simple correlation between affluence and over-consumption of unhealthy foods no longer exists.

2. Addressing future public health challenges arising from food consumption patterns will require policies that connect agricultural production, environmental issues and nutrition.

3. Policy efforts targeted at increasing rates of physical activity among older women and men and improving and diversifying diets in general may be more important than specific policies to promote dairy consumption, as the link between dairy intakes and bone health is not straightforward.

4. Nutrition policies to address the challenges of over-consumption are increasingly required; experience from other countries, including the UK, suggests that 'soft' voluntary measures are often insufficient to address dietary issues. China may need to consider the use of stronger regulatory and tax measures in the fight against poor diets.

5. China and other countries could benefit from synergistically pursuing health and environmental goals through policies to promote sustainable healthy eating patterns. Such diets tend to be lower in animal products and richer in plant-based foods; therefore, measures are likely to be needed to moderate the rise in animal product consumption.

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