Obesity in the Midst of Unyielding Food Insecurity in Developing Countries

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- Income disparity within and among developing countries explains how there can be obesity in the midst of undernutrition.
- Rising incomes, urbanization, global integration, and more supermarkets have contributed to increased consumption of convenient, high-calorie foods among the higher income population.
- Obesity-related diseases have become more widespread in developing countries.

The continued escalation of food prices has again focused attention on global food insecurity and its root cause, poverty. Despite international commitments to improve food security in low-income countries, progress has been limited. For the 70 countries covered in ERS's Food Security Assessment, nearly 1 billion people were estimated to be undernourished (food insecure) in 2007. The persistence of food insecurity is troublesome because it comes at a time when food consumption in many developing countries has been improving. In fact, the rising rate of overweight and obesity in many developing countries is a growing concern. While the economic and health consequences of malnutrition and hunger have been studied extensively, less attention has been given to the economic implications of rising obesity rates in developing countries.

How can obesity exist in the midst of persistent food insecurity and hunger? (see box, "Defining Obesity"). The answer lies mainly in differences in income levels among and within countries. The range of per capita incomes among developing

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countries is extremely broad: from $124 per year in Ethiopia to $24,000 in Singapore in 2005. Within countries, too, income levels vary greatly. For example, in Guatemala, the poorest 20 percent of the population holds less than 3 percent of the country's total income. The wealthiest 20 percent of the population accounts for 64 percent of the country's total income. This case is not an anomaly. On average, in 11 of the lower income Latin American and Caribbean countries included in ERS's Food Security Assessment, the lowest income quintile holds a little over 3 percent of total income, whereas the highest quintile has just under 60 percent. This disparity in income shares translates into vast differences in income levels and, hence, purchasing power, within a country. In Guatemala, for example, the lowest income quintile consumed an estimated 75 percent of the daily nutritional requirement in 2007, while the highest income quintile exceeded the nutritional requirement by nearly 30 percent.

A number of forces have contributed to rising rates of obesity among the upper income quintiles. Average per capita food consumption in developing countries increased 28 percent between 1970 and 2005, three times the rate in developed countries.

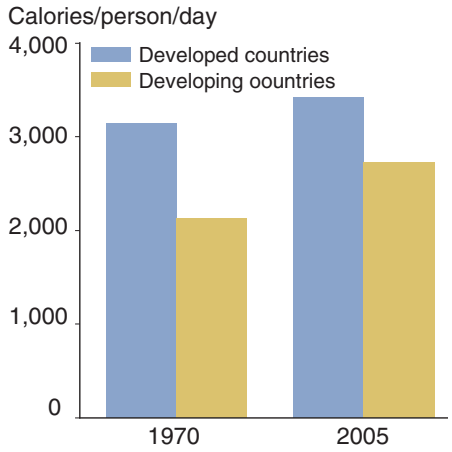
The diets of people in the upper income quintiles have changed as they moved away from some traditional foods, such as root crops and vegetables, to higher calorie foods. In addition to income growth and declining food prices, urbanization is a key factor behind the dietary changes. An urban lifestyle means less

Defining Obesity

For adults, overweight and obesity ranges are determined by using weight and height to calculate the "body mass index" (BMI). BMI is used because, for most people, it correlates with their amount of body fat. An adult who has a BMI between 25 and 29.9 is considered overweight, and an adult who has a BMI of 30 or higher is considered obese.

More detailed information is available at:
http://www.cdc.gov/NCCdphp/dnpa/obesity/defining.htm and
http://www.who.int/mediacentre/factsheets/fs311/en/

Calorie availability is increasing in developing countries



Source: Food and Agriculture Organization of the United Nations.

physical activity and higher demand for convenience foods. At the same time, expansion and improvement of the global transportation systems have facilitated trade in perishable foods and opened markets. Many exporters were able to capitalize on these changes by supplying a wider variety of products in growing and evolving markets.

Rising Incomes, Declining Food Prices Boosted Calorie Intake

Rising calorie intake per capita and the shift toward higher calorie and more processed foods have been observed in both developing countries and the least developed countries. In both cases, much of this diet transition can be attributed to high per capita income growth, particularly in large countries, such as China, Brazil, and India. Developing countries' per capita income almost tripled between 1970 and 2005. Conversely, per capita income in the least developed countries increased only 20 percent during the 35-year period.

The recent, well-publicized runup in food prices was preceded by several decades of declining real food prices (adjusted for inflation). In 2000, real world prices for rice, sugar, and soybean oil were less than 40 percent of 1970 levels. Real beef prices in 2000 were about half of 1970 levels, while wheat prices were 60 percent. Although food prices have increased since 2004, they remain below 1970 levels, in real terms.

Per capita consumption in developing countries exceeded 2,722 calories per day in 2005, up from 2,134 calories in 1970. The Food and Agriculture Organization (FAO) of the United Nations recommends a minimum daily per capita intake of roughly 2,100 calories. Grains account for more than half of the diet in developing countries, but the 8-percent increase in grain consumption between 1970 and 2005 was much lower than the overall increase in calorie consumption. Per capita consumption of some higher valued food items soared; meat, eggs, and vegetable oils increased roughly threefold, while sugar increased 66 percent. Meat, however, still accounted for only about 7 percent of the diet in developing countries in 2005, compared with 12 percent in developed countries.

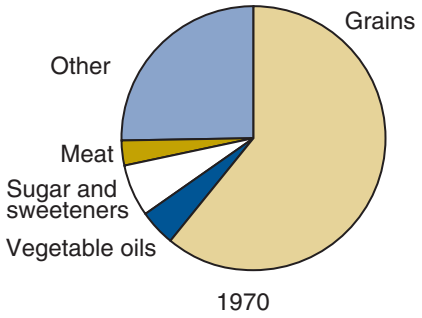
During the same period, calorie consumption per capita also rose in the least developed countries (those with per capita incomes below $500 per year). The gain from 2,000 calories in 1970 to 2,200 in 2000, however, was much smaller than in developing countries, and least developed countries remain far behind the rest of the world in overall nutrition. The calorie contribution of vegetable oils grew the most (28 percent), followed by sugar and eggs (15 percent) and meat and milk (7 percent). In absolute terms, however, consumption of these foods remains well below the level in other countries. Moreover, consumption of nutritionally beneficial foods, such as pulses, vegetables, and fruits, has declined in least developed countries. The decline was sharpest for vegetables (32 percent), followed by fruit (9 percent) and pulses (5 percent). Even with the modest increase in overall calorie consumption in these countries, the shift in diet toward fats and sugar and away from their traditional diet of vegetables and pulses seems to be clear.

Urbanization and Globalization Also Influence Diet Change

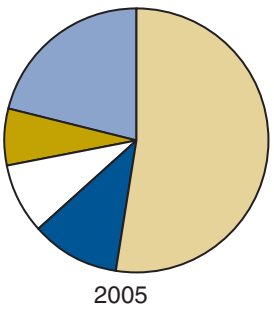
Increasing urbanization has been gaining attention for its contribution to shifts in diets. Unlike rural agricultural households, urban residents do not rely solely on home-grown or locally grown foods and therefore have access to a wider selection of foods. In developing countries, the rate of urbanization was two to three times higher than the population growth rate during the last three decades.

Although detailed data for each country are not available, examining diet composition across countries shows that, in countries with the same income level, those with a higher share of urban population tended to have diets with more fat,

Grain share of developing country diet shrinks...



...as meat and vegetable oil share rises



Source: Food and Agriculture Organization of the United Nations.

both vegetable and animal. For example, the urbanization rate is 67 percent in Mexico versus 92 percent in Uruguay, and daily per capita consumption of fat in Mexico was half that of Uruguay, despite similar per capita income levels ($6,172, and $6,248 in 2005). Similarly, fat consumption in Jordan was more than four times that of Namibia. Although their per capita income was almost the same ($2,086 in Jordan and $2,083 in Namibia in 2005), the 82-percent urbanization rate in Jordan was much higher than that of Namibia's 35 percent. Other factors, such as cultural and dietary habits, might also contribute to differences.

All urban environments are not the same; the openness of an economy, access to mass media, particularly television, and marketing systems can also significantly influence consumers' choices. Regardless of consumer food choices, however, an urban lifestyle usually means a decline in physical activity and higher participation of women in the workforce. The latter often translates into less time for preparing food, which often leads to increased consumption of processed foods.

ERS statistical analysis confirms this relationship. Analysts used cross-country data for 136 countries to estimate the impact of such factors as per capita income, urbanization rate, share of households with TVs, and a country's development level on daily consumption of calories and fat. The results showed positive and statistically significant relationships between each of three variables (per capita income, urbanization rate, and share of households with TVs) and calorie and fat consumption.

Global Integration and More Trade Increase Availability of Processed Foods

In addition to income growth and urbanization, the expansion of international trade through world economic integration has influenced global diets. Trade agreements of the last three decades, in addition to expanding global trade, have been a catalyst for increased investment in transportation and communication systems. The average ocean freight and port charges for U.S. import and export cargo decreased 60 percent between 1970 and 1990. Technologies, such as refrigeration, allowed trade in perishable products, including cut flowers and live shellfish. The decline in global trade barriers was followed by liberalization in global financing, which altered the food systems of most countries by expanding the role of supermarkets in food marketing.

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Food imports have become an important component of food supplies in both developed and developing countries because national food self-sufficiency has declined in many countries during the last few decades. Trade in grains, vegetable oils, and meat increased three to five times during the past three decades. Developing countries also became more dependent on imports of staple commodities, such as grains, and vegetable oils. Rising consumption of wheat, in the processed form of bread and pasta, has replaced traditional grains such as millet and sorghum, as well as root crops.

Import growth was not limited to staple foods; imports of a variety of commodities, including semi-processed and processed foods, have also grown. Between 1970 and 2005, global trade volume of highly processed foods (the FAO definition includes food items such as canned meat, breakfast cereals, pastries, and wine) increased more than four times. Import growth for this category of food was highest in developing countries—growing more than fivefold between 1970 and 2005.

Growth of Supermarkets Increases Food Variety

The evolution of the global food system and the increase in the number of supermarkets have promoted convenience shopping and wider food varieties in developing countries. With their large scale of operations, supermarkets are often able to offer lower prices than traditional retail stores. Lower prices have boosted the market shares and profits of supermarkets, which have fueled their expansion. The high growth in market share of supermarkets in Latin America highlights the extent

of the change: from a 10- to 20-percent market share in the 1980s to 50-60 percent in the 1990s, and now rapidly approaching the U.S. share of about 70-80 percent. The experience of East and South Asia also shows a similar pattern. In Sub-Saharan Africa, with the exception of South Africa, the supermarket share in the retail food market is much smaller, but expansion is underway due to growing investment by South African companies.

The growing role of supermarkets has both positive and negative implications for consumers. On the positive side, supermarkets are introducing better quality, greater variety, higher standards, and lower prices to the food systems of developing countries. On the negative side, increased access to low-cost, high-calorie, convenience foods for urban consumers with limited physical activity fuels obesity problems.

Both Obesity and Undernutrition Are Problems in Developing Countries

The global increase in calorie consumption has included excess food consumption by some segments of the population in many countries. In developing countries, consumption of high-calorie foods, such as fats and sugar, has risen, and the income elasticity (percentage change in consumption for each 1-percent change in income) for these products remains positive. Because incomes are projected to rise for almost all developing countries, the role and contribution of these commodities in the diets of these countries is expected to increase. At the same time, the problems of undernutrition and food insecurity still exist. An estimated 800 million to 1 billion people are food insecure, and, according to FAO and ERS researchers, the number of food insecure people has remained relatively steady during the last decade. The International Food Policy Research Institute estimated that there are about 1 billion overweight and obese people worldwide. Although this problem is more prevalent in Western countries, it is increasing rapidly in developing countries, as well.

In many developing countries, the growing trend of overweight populations is most prevalent among the higher income groups. In contrast, in higher income countries, this problem is more prevalent among lower income groups. ERS estimates that in 2007, consumption by those in the upper 20 percent income group in low-income Asian, Latin American and the Caribbean, and North African countries equaled roughly 2,800 calories per person per day. This level is in the upper range of the requirement for a moderately active adult. In fact, consumption for the highest income quintile in North Africa was estimated at nearly 3,300 calories per day. Among individual countries, food consumption in the highest income quintile was 2,800 calories or higher in 23 of the 70 study countries. Therefore, although an estimated 982 million people in these 70 countries were food insecure, an estimated 370 million, or 12 percent of the population, consumed at least 2,800 calories per day in 2007.

The situation with overweight populations in developing countries could worsen because of the increasing number of overweight children. For example, according to a study by the World Health Organization (WHO), 8-9 percent of children under age 5 in Egypt and Algeria were overweight, which is close to the 10 percent estimated for the United States. According to FAO, in six case study countries (China, Egypt, India, Mexico, the Philippines, and South Africa), the increase in food consumption over the past 20 years led to a reduction in the number of underweight children and adults. In China, Egypt, Mexico, and the Philippines, there were more overweight adults than underweight adults in 1999.

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Rising Rates of Obesity-Related Diseases Bring New Challenges to Developing Economies

The main concern of the developing countries continues to be how to curb food insecurity, hunger, and associated diseases. More recently, however, obesity-related diseases such as diabetes and hypertension have become more widespread. For example, the WHO reports that, in China, hypertension increased 12 percent (or the equivalent of 160 million people) between 1991 and 2002. Similarly, an estimated 25-50 percent of the population in countries like Mexico, Thailand, and Tunisia suffer from diabetes. The WHO assessment indicates that overweight and obesity represent a rapidly growing threat to health in an increasing number of developed and developing countries. It also indicates that, in some countries, overweight and obesity are now replacing the more traditional public health concerns of undernutrition and infectious diseases.

The direct cost of obesity is the increased risk of chronic diseases such as diabetes, cardiovascular disease, gallbladder disease, and cancer. If current trends continue, health costs for the developing economies could be substantial. In most developing countries, people are a major resource, and public health is a key to economic progress. Research in developed countries shows that obesity reduces productivity. Moreover, health costs associated with the growing rate of obesity and its related diseases could overwhelm the

health care systems of developing countries already overburdened with the costs of combating communicable diseases and the effects of malnutrition among lower income populations. According to the latest World Bank data, average health expenditures per capita in developing countries are less than 10 percent of expenditures in developed countries and less than 1 percent in the least developed countries.

Policy Options

In contrast to undernutrition and hunger, issues and problems related to overweight and obesity are a fairly new phenomenon for developing countries. As a result, data in this area are limited, but health statistics indicate a growing trend in diet-related diseases. For example, WHO estimates that the top 10 countries in the number of cases of diabetes are India, China, the United States, Indonesia, Japan, Pakistan, Russia, Brazil, Italy, and Bangladesh. The health and economic costs associated with these diseases are well known. The new challenge for developing countries is to identify effective policies that could prevent repeating the obesity experience of Western countries.

Nutritional education is probably the key in terms of reaching out to consumers. Because dietary habits are formed at a young age, nutritional education of children can play a vital role in influencing dietary habits. Advertising, particularly on television, directed to children profoundly affects their perceptions. A survey of six Asian countries—India, Indonesia, Malaysia, Pakistan, the Philippines, and South Korea—showed that most children in these countries watch television 2-4 hours per day on weekdays, and more on weekends and during school vacations. Each hour typically contains 20 minutes of advertising. The survey also revealed that, with the exception of parents in South Korea, more than 50 percent of parents in the study countries said that their children influenced family food purchases. U.S. research shows a significant correlation between television viewing and obesity among children. For this reason, countries like Sweden, Australia, Canada, and the United Kingdom have taken steps to curb the impact of advertising on children.

Other policy interventions can promote healthy eating. The Scandinavian countries reduced coronary heart disease between 1976 and the 1980s by providing subsidies for the purchase of healthy food items, such as fish. During the 1990s, Singapore reduced child obesity through a combination of changes in school diets and increased fitness and physical activity programming. Its Trim and Fit program, started in 1992 and managed by the Ministries of Health and Education, is credited as one of the most successful programs in the world in terms of sustained obesity management (see box, "Singapore's Efforts To Control Obesity"). The program includes teacher and student education, changes in school lunches, assessment of students, and increased physical activities during school time.

Singapore's Efforts To Combat Obesity

Recognizing a rise in obesity rates as well as Type 2 diabetes among children, the Singapore Government introduced the Trim and Fit (TAF) program in 1992. The program was targeted toward schoolchildren from primary school to pre-university levels. The program's goal was for the students to achieve a healthier lifestyle through improved nutrition and regular exercise.

Through this program, all students participated in fun runs and aerobic workouts. Overweight students engaged in 1½ hours of physical activity per week, in addition to their regularly scheduled physical education classes, until they lost a required amount of weight. This activity could be in the form of playing games or a particular sport. The schools provided parents with information on the program as well as ideas for activities and improved nutrition at home. The Government also provided guidelines to the schools as to the types of food and drinks they should sell. Additionally, water coolers were installed in all schools to encourage students to drink more water.

Since TAF was implemented in 1992, the share of students who passed the Government's national physical fitness test jumped from less than 60 percent in 1992 to more than 80 percent in 2002. The share of overweight students fell from 14 percent in 1992 to 9.5 percent in 2005.

After receiving criticism for targeting overweight children and thereby stigmatizing them, the Singapore Government ended the TAF program in 2007. It was replaced by the Holistic Health Framework (HHF), which targets all schoolchildren and has a broader focus than TAF. In addition to improving physical fitness, it aims to improve mental and social health through a general healthy lifestyle.

This article is drawn from . . .

"Global Diet Composition: Factors Behind the Changes and Implications of the New Trends," by Shahla Shapouri and Stacey Rosen, in *Food Security Assessment, 2007*, GFA-19, USDA, Economic Research Service, July 2008, available at: www.ers.usda.gov/publications/gfa19/

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"Converging Patterns in Global Food Consumption and Food Delivery Systems," by Elizabeth Frazão, Birgit Meade, and Anita Regmi, in *Amber Waves*, Vol. 6, No. 1, USDA, Economic Research Service, February 2008, available at: www.ers.usda.gov/amberwaves/february08/features/covergingpatterns.htm