Impact of globalization on the food consumption of urban India

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INTRODUCTION

At first sight the link between globalization and food intake appears to be rather remote. However, its influence can be substantially high, although it works mostly through employment, incomes, prices and the market influence on food preferences. Globalization means bringing the domestic economy closer to the international economy in many ways. It is a consequence of liberalization and decontrol. The rationale behind liberalization and globalization was to bring competition and efficiency into the economy. They are part of structural reforms. Change in the existing structure is expected to contribute to efficiency in the long term and lead to absorption of labour, increase in incomes and overall prosperity.

One of the expected impacts on dietary patterns relates to higher incomes. The consumption pattern shifts away from cereals and towards more expensive protective foods. The second expected impact is the shift towards more processed foods. Third is the market influence of popular fast foods promoted through advertising by transnational corporations. Changes in the dietary pattern in turn influence the nutritional status of the population. Some effects such as fewer cereals and more protective foods in the diet can improve nutritional status, while a shift towards high-fat, high-sugar snack foods may lead to obesity and chronic diseases. Another adverse impact may be displacement of the poor by structural reforms. This group experiences lower affordability and a reduced calorie intake leading to growth disorders, such as stunting. A more severe impact may be on higher infant mortality rates and lower life expectancies.

The impacts of globalization differ from country to country, and between and within communities, depending upon the losers and winners in the process of change. It is difficult to trace these impacts in a sequential manner and to apportion total impacts between globalization and other forces at work in the economy. Reasons for the sedentary lifestyles of middle-class and upper-class urban workers, and deterioration of the low-income diets of rural migrants can be found elsewhere in the pattern of economic growth, not necessarily related to globalization.

This paper attempts to examine urban dietary patterns in India, in the backdrop of globalization and its influence on employment, incomes and market forces. The paper consists of three parts. The first part looks at the extent of globalization and urbanization and their impact on employment, incomes, imports and consumerism. The second part considers the dietary patterns of the urban population and attempts to link them to globalization. Certain aspects of the consumption patterns of the non-poor and the poor

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have been considered at the all-India level and across the regions in the urban areas of the country, within the limitations of the data. The increasing intake of processed foods by those not so poor and the low calorie intake of the poor in various states have been analysed. The third part briefly touches upon the implications of these consumption patterns on the nutritional status of the population.

BACKDROP OF INDIAN GLOBALIZATION AND URBANIZATION

July 1991 marked the beginning of globalization in India. It was a critical turning-point in the economic history of the country. Record low foreign exchange reserves triggered a financial crisis since they were barely enough to meet the import needs of two or three weeks. Under these circumstances, India decided to open up its economy. It devalued its currency; decontrolled the foreign exchange; unshackled its industry; privatized part of the public sector; removed subsidies on many items; removed import duty on several items; lowered the barriers; and invited foreign competition. In the decade that followed, liberalization and globalization proceeded unchallenged, albeit slowly and there was no looking back.

As a result, more than a decade later, India now has foreign exchange reserves worth more than US$100 billion. The Federal Bank, known as the Reserve Bank of India, has been struggling to keep the value of the rupee reasonably low against other currencies. The economy was able to maintain for most of the decade a gross domestic product (GDP) growth of 6 percent per annum. This is one side of the story, which sounds like a success story and an advertisement for globalization.

However, the other side of the story is a far cry from success. The growth of GDP in the past decade owes more to that of the service sector than the manufacturing one, which decreased from 29 percent in 1990 to 26 percent in 2001, while that of the service sector increased from 39 to about 49 percent.

Yet there were more losers than winners in the process. The gain in income came from reduced employment and more capital-intensive and labour-substituting investment. The increased productivity per worker was because of a reduction in the number of persons employed in the restructuring that took place across industry. Regular employment shrank and there was an increase in casual work. The rate of growth of employment decreased to 1.9 percent in 1993-2000, compared to the previous period of 1983-1993/1994 at 2 percent. Unemployment increased from 5.9 percent in 1993-1994 to 7.32 percent in 1999-2000. As per the economic census, the growth of workers in the establishments[2] came down to 1.7 percent in 1990-1998 from 2.84 percent in 1980-1990 (GOI, Ministry of Statistics and Programme Implementation, 2001).

The elasticity of employment with respect to income has decreased in all sectors. In the manufacturing sector, it decreased from 0.38 percent in 1983 to 1993 to 0.33 percent in 1993-1994 to 1999-2000. Regarding electricity, gas and water supplies, employment shrank with an increase in these infrastructure facilities. It changed from a positive elasticity of 0.63 percent between 1983 and 1993 to a negative elasticity of -0.52 percent between 1993 and 1994 and 1999-2000.[3]

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[2] Establishments refer to the units of economic activity undertaken with the help of at least one hired worker on a fairly regular basis (Planning Commission, 1998).

[3] This means a 1 percent increase in the sector income has led to an increase of 0.30 percent in manufacturing employment. A negative elasticity means that a 1 percent increase in income in the electricity, gas and water supply sector led to a decline in employment by more than 0.5 percent.

In community social and personal services, employment elasticity changed from a positive 0.68 to -0.25 percent over the same period. The primary sector employment either shrank or had an elasticity close to zero (GOI, Planning Commission, 2002). For the economy as a whole the employment elasticity came down from 0.52 to 0.16 percent over the same period (GOI, Planning Commission, 2002). In other words, the economy lost its capacity to absorb more labour. As a consequence, unemployment has increased, particularly in the lower-income groups. Unemployment in these lowest-expenditure classes was close to 10 percent, while it was less among the higher-income groups (Table 1).

TABLE 1
Unemployment rate by expenditure class

Serial no.	Expenditure class	Unemployment rate (current dailystatus/percentage)
1	0-300	9.61
2	300-350	9.67
3	350-425	8.20
4	425-500	9.20
5	500-575	9.20
6	575-665	8.63
7	665-775	8.18
8	775-915	7.18
9	915-1 120	6.65
10	1 120-1 500	5.68
11	1 500-1 925	4.67
12	>1 925	4.10

Source: GOI, Planning Commission, 2001.

Another interesting feature of the Indian economy is that the decade of globalization and the fairly high growth of industry compared to agriculture have led to a lower than expected level of urbanization.[4] The growth of the urban population is lower than in the previous decade. It decelerated from 3.1 percent in 1981 to 1991 to 2.75 percent in 1991-2001. The urban/rural growth differential was lower in 1991 to 2001 at 1.08 percent, compared to 1.70 percent between 1971 and 1991. The share of urban population increased only moderately from 25.71 percent in 1991 to 27.78 percent in 2001 (GOI, Planning Commission, 2002). Compared to the rest of Asia where about 37 percent of the population live in urban areas, India had fewer than 30 percent living in these areas by the turn of the century. There were 35 urban agglomerations with a population of more than one million in 2001 and about 37 percent of the urban population live there. There are two mega cities, Mumbai and Delhi, with a population of more than ten million. The population of the metropolitan cities grew at 2.56 percent in 1991 to 2001 as against the urban rate of growth of 2.75 percent. However, there are pockets of phenomenal growth such as the union territory of Delhi. The major reason is that the growth in GDP during this decade was a result of reduced employment and increased labour productivity, together with an increase

[4] Urbanization is a process whereby more and more people come to live in towns and cities rather than stay in villages. Typically in a developing country the degree of urbanization is low but the rate of growth of the urban population is high and concentrated in a few big cities.

in incremental capital out-ratios, rather than caused by a shift of the population into high-paid jobs or an expansion of employment. Thus it is also obvious that the benefits favoured a few highly paid employees and profit-making industrialists rather than an expansion of employment opportunities in urban areas. This is probably the reason for the quick downturn of GDP growth in the past two years, which had a narrow base of a few high-growth industries rather than a broad base spread over more industries and people.

Globalization, processed food imports and domestic expansion

Imports of food such as cereals and cereal products, cashew nuts and edible oils have increased since globalization began. The imports of many food items were liberalized by putting them on "open general licensing", which does not require permission from the government. Import duties were reduced to negligible or zero levels on many food items. As a result, the food-related imports of cereals and products surged from 308 000 tonnes in 1990 to 1 620 000 tonnes in 1999-2000 (GOI, Planning Commission, 2002). Edible oil imports increased from 526 000 tonnes in 1990 to 4 190 000 tonnes in 2002 (GOI, Planning Commission, 2002). Food-related imports represent about 4.5 percent of the total imports of about US$51 billion, constituting approximately US$3 billion (GOI, Planning Commission, 2002). Essential food items such as edible oils and pulses make up the bulk of the imports, while the processed food sector is much smaller. The impact on consumption does not vary dramatically, because of these imports, since they are less elastic to income changes. Compared to the food market turnover of about US$70 billion, US$3 billion worth of imports are not significant so far. However, in specific sectors imports may influence urban consumption. Imports of processed foods, particularly milk products and fruit and vegetables have increased substantially. The impact of imported processed foods appears to be small for the country as a whole.

The entry of many transnational corporations into the country and expansion of the already existing food processing ones is impressive. Food products, beverages and tobacco together have a weight of about 11.5 percent in the index of industrial production. The food products industry recorded a growth of 4.20 percent in 1999-2000 and 10.12 percent in 2000-2001 (GOI, Ministry of Food Processing Industries, 2003). Thereafter there was a negative growth of -1.68 in the following year. The problem was the economic downturn in all sectors in 2000-02 (GOI, Ministry of Food Processing Industries, 2003).

The turnover of the total food market is approximately Rs250 000 crores (US$69.4 billion) out of which value-added food products comprise Rs80 000 crores (US$22.2 billion). Since liberalization, several billion dollars worth of foreign capital have invaded the various segments of the food and agroprocessing industry. The food processing industry is poised to attract phenomenal investment of around Rs92 000 crores during the Tenth Five-Year Plan period (2002-2007). However much depends upon the increase in the purchasing power of the people (GOI, Ministry of Food Processing Industries, 2003).

To sum up, we may conclude that liberalization and globalization undoubtedly benefited India in achieving higher efficiency and competitiveness but did not lead to higher absorption of labour. Urbanization proceeded slowly and unemployment has spread. The impact on consumption of lower-income groups is expected to be negative. The expected impact on the higher-income groups is a shift to more expensive foods, imported processed foods and the spread of popular brands of fast foods, both Indian and foreign.

PATTERNS OF URBAN CONSUMPTION

As incomes go up, the food basket becomes more diversified. Cereal consumption decreases and the consumption of other foods increases. Even though people spend a

smaller share of their income on food, they spend more in absolute terms. The urban food basket is the most diversified. Urban people consume fewer cereals and more of other items. Protective foods such as pulses, fruit and vegetables, milk, eggs and meat (including mutton) are easily available in the urban environment. If prosperity arising from economic growth and the influence of globalization were positive, then we would expect a more balanced diet away from cereals and towards protective high-protein foods, vegetables and fruit at the average level.

In addition to the change in the consumption pattern over time at the all-India level, we have also examined the consumption basket at the state level. Differences between prosperous states such as Delhi, Punjab and Haryana on the one hand and underprivileged states such as Orissa and Bihar on the other capture the impact of globalization on the consumption pattern.

Trends in average consumption

Data on the physical quantities of consumption of various items have been collected and published by the National Sample Survey Organization (GOI, National Sample Survey Organization, 2001a). For urban India as a whole from 1987 to 1988 and from 1999 to 2000 consumption has changed. Consumption of rice and wheat has decreased marginally. Milk and egg consumption records an increase. Substantial increases over the various time periods are seen in the consumption of tea, biscuits, salted snacks, prepared sweets, edible oils, sugar and country sugar (jaggary). There is a decline in the intake of fruit and vegetables. Thus it seems that diets have shifted towards more sugars and fats, less fruit and fewer vegetables. There is no evidence of a substantial shift of average diets towards nutritive and protective foods. The phenomenal growth in biscuit consumption and tea is more a result of prosperity and changing preferences. Therefore the impact of globalization on these two items appears to be at best indirect (Table 2).

TABLE 2
Change in the pattern of consumption of selected food items of the urban population (kg/month/per capita)

Food items	1987-88	1993-94	1999-2000
Rice	5.26	5.13	5.10
Wheat/flour	4.37	4.44	4.45
Pulses	0.87	0.77	0.85
Liquid milk (litres)	4.26	4.89	5.10
Eggs (number)	1.43	1.48	2.06
Milk fat	0.04	0.05	0.07
Edible oils	0.41	0.46	0.74
Flesh foods	0.39	0.40	0.46
Vegetables	3.94	3.09	3.00
Leafy vegetables	0.40	0.15	0.17
Mangoes	n.a.	0.12	0.16
Bananas (number)	5.10	4.48	5.00
Lemons (number)	n.a.	1.23	1.39
Sugar/jaggary	0.97	0.97	1.32
Tea leaf (g)	60.43	63.93	70.44
Biscuits	0.07	n.a.	2.06
Salted refreshments	0.04	n.a.	1.36
Prepared sweets	0.11	n.a.	0.40

Source: GOI, National Sample Survey Organization, 2001a.

Consumption across the expenditure classes

The pattern of consumption across the expenditure classes among the urban population reveals the same tendency. Per capita consumption of foods rich in protein such as pulses, milk products, eggs, fish and meat is far from adequate in all income classes. Consumption of pulses is barely above the Indian Council of Medical Research (ICMR) norm only in the highest three income classes, constituting about 20 percent of the population. None of the expenditure groups consume adequate quantities of eggs, fish and meat. Forty percent of the population consume milk below the norm of 150 ml.

Consumption of foods such as fruit that provide vitamins and micronutrients is fairly low, even in the diets of the higher-income classes. Fruit consumption is barely above the ICMR norm in any expenditure class, with the exception of the highest class, constituting 5 percent of the population. Consequently, 95 percent of the people have diets that are lacking in fruit. Vegetables are consumed in almost all expenditure classes (100-300 g/per capita/day). This would appear to be adequate. Part of the quantity consumed is in the form of tubers, which are rich in carbohydrates, leaving the diets inadequate in green and yellow vegetables (Table 3).

TABLE 3
Per capita consumption of selected food items for all India, urban (g/day)

Serial no.	MPCE[1] class (Rs)	Cereals and cereal substitutes	Pulses and pulse products	Milk, liquid (litres)	Milk products	Edible oils	Eggs, fish and meat	Vegetables	Fruit (fresh)	Sugar and *gur*	Beverages and processed foods
1	0-300	299.67	16.67	42.33	0.00	10.33	8.13	113.27	5.15	16.00	35.33
2	300-350	338.33	20.00	56.00	0.33	12.33	11.29	141.42	8.17	19.33	60.67
3	350-425	341.67	22.33	73.67	0.33	14.67	14.42	150.92	9.13	25.67	70.53
4	425-500	358.33	27.33	95.33	1.67	20.67	17.75	164.43	9.61	27.33	117.20
5	500-575	353.67	30.00	114.00	3.33	22.00	19.54	180.60	13.19	29.67	93.81
6	575-665	360.00	32.00	144.33	4.00	25.00	21.92	186.07	15.57	34.67	124.68
7	665-775	356.33	37.67	171.67	5.33	28.33	23.63	193.29	19.21	35.33	181.85
8	775-915	355.33	35.67	192.67	5.67	26.33	25.50	214.21	23.39	36.67	186.25
9	915-1 120	350.00	38.00	226.33	12.00	28.00	28.54	218.51	28.76	38.67	213.28
10	1 120-1 500	350.67	44.67	263.67	11.00	29.67	32.96	238.30	36.38	41.00	265.17
11	1 500-1 925	331.33	45.33	334.67	14.67	32.33	35.25	268.44	56.76	43.67	351.25
12	1 925 and more	324.00	49.00	401.33	17.67	35.00	52.92	299.32	79.70	49.33	427.41
	All classes	347.33	33.33	170.00	6.33	24.00	23.92	196.72	22.48	33.33	166.66

[1] MPCE: monthly per capita expenditure
Source: GOI, National Sample Survey Organization, 2001a.

Processed and ready to eat foods – consumption and production

It is interesting to note from Table 3 that in urban areas consumption of processed foods and ready to eat foods has gone up together with income. The tendency is clear across all expenditure classes except in the lowest three classes, consisting of about 20 percent of the population. Consumption of beverages, biscuits, processed foods, salted snacks, prepared sweets and other purchased foods constitutes 100-427 g/per capita/day, from the lowest to the highest expenditure class. Average consumption is about 167 g/per capita/day. This is probably an indication of the increasing consumption of snack foods and high-calorie foods such as sweets, which are purchased away from the home. Energy-wise they may contribute to as many as 1 000 kcals in the daily diet, or 30 to 40 percent of the required calories in the high-income classes.[5]

A look at the consumer food industry of India further reveals the possible impact of globalization on urban diets. The consumer food industry in the country is not big, but has grown in certain aspects in the post-liberalization period. The industry mainly consists of cereal- and sugar-based products such as bread, biscuits, cakes, pastries, pasta, cornflakes and ready to eat/cook products. Bread and biscuits constitute the largest segment of the consumer food industry. About 40 percent of bread is produced in the organized sector while 74 percent of biscuits are produced in the same sector (GOI, Ministry of Food Processing Industries, 2003). Other products have a smaller share in the organized sector.

[5] Approximately100 g of processed cereals and sugar-based foods can provide up to 200 kcals or more.

Various transnationals have entered the domestic market, increasing investment and competition in the post-liberalization period.

Some cocoa products, soft drinks, alcoholic beverages, and mineral and packaged water are also important in the consumer food industry. Soft drinks constitute a significant contribution as the third largest industry after packed tea and biscuits. This has attracted the largest foreign direct investment in the country of over US$1 billion in recent years. Production was about 6.6 billion bottles in 2001-2002 (GOI, Ministry of Food Processing Industries, 2003).

The consumption of fizzy drinks, pizzas and potato crisps, etc. has increased in the diets of the urban population, as witnessed by the sales increase in these items. Undoubtedly, globalization has facilitated the entry of branded products and outlets into the market, such as Coca-Cola, Pepsi-Cola, Pizza Hut, Domino's Pizza and Mcdonald's, primarily for the more affluent consumers. Other local products of a cheaper variety, both by branded and unbranded producers, flood the markets. Globalization is the main cause of the expanding market for ready to eat foods. Although the branded product market is not very big, it is growing. For example, Amul is an established company producing milk powder and butter in India. However, it has started competing with global brands for cheese and pizza in recent years (Bhushan and Damodaran, 2001).[6]

A number of unbranded producers flood the markets with cheaper products such as potato crisps and pizzas to woo consumers and suit the pockets of the lower-income groups. Domino sells about 100 000 pizzas a day, Pizza Hut 40 000 and Amul about 50 000 frozen pizzas a day (Pizzamarketplace.com, 2003). The prices range any where between Rs20 for an Amul frozen pizza to Rs450 for a special premium large pizza from Domino (Pizzamarketplace.com 2003). The unbranded market tends to be larger.

Since liberalization in 1991, total investment in the processed food sector has been in the range of US$156 billion (of this, foreign direct investment has been about US$2 billion). Thus urban consumption patterns are influenced by globalization across all expenditure groups except the lowest. Direct consumption of popular global brands on the one hand and the consumption of cheaper substitutes on the other have increased the overall consumption of processed foods (GOI, Ministry of Food Processing Industries, 2003).

It is noteworthy that the processing of meat, poultry, fish, eggs, milk, vegetables and fruit has not shown any significant increase. About 15 percent of the milk and 2 percent of fruit and vegetables are processed. Egg and poultry meat production increased from about 0.58 million tonnes in 1995 to 0.97 million tonnes in 2001 (GOI, Ministry of Food Processing Industries, 2003).

The food processing industry as well as urban consumption patterns are highly skewed towards cereal- and sugar-based products and not towards meat, fish, poultry, milk and vegetables.

Average consumption across the states

A study of dietary patterns across the states strengthens the observation above. We have calculated an index of consumption by taking the ratio of requirement to actual consumption. An index value of one indicates that the requirement is the same as consumption. An index value higher than one indicates consumption above the requirement and an index value of less than one indicates consumption below the requirement. The ICMR calculated the requirement of various food items at the average

[6] Also see the Times News network, 2003.

level in a balanced diet for a reference person. These norms are reliable at the average level for the population as a whole (Table 4).

TABLE 4
Per capita consumption index of food items with ICMR norm

Serial no.		Cereals	Sugar	Pulses	Total vegetables	Fruit	Edible oils	Milk	Eggs	Meats	Fish and prawns
	ICMR norm (g)	420	30	40	125	50	22	150	45	25	25
	State										
1	Andhra Pradesh	0.87	0.74	0.73	0.78	0.64	0.91	0.88	0.24	0.39	0.11
2	Assam	0.97	0.71	0.63	0.60	0.53	0.83	0.43	0.25	0.31	1.05
3	Bihar	1.01	0.74	0.78	0.74	0.53	0.79	0.68	0.12	0.27	0.21
4	Gujarat	0.67	1.29	0.86	0.88	0.68	1.59	1.32	0.08	0.16	0.04
5	Haryana	0.74	1.66	0.88	0.75	0.80	0.95	1.81	0.09	0.09	0.00
6	Himachal Pradesh	0.82	1.29	1.17	0.82	0.82	1.11	2.02	0.23	0.24	0.01
7	Jammu and Kashmir	1.02	0.80	0.78	0.98	0.86	1.17	1.60	0.20	0.75	0.01
8	Karnataka	0.81	1.08	0.87	0.76	0.75	0.89	1.01	0.23	0.44	0.16
9	Kerala	0.73	0.98	0.58	0.44	0.68	0.70	0.70	0.30	0.44	2.51
10	Madhya Pradesh	0.88	1.13	0.83	0.86	0.55	0.97	0.87	0.10	0.16	0.07
11	Maharashtra	0.74	1.28	0.85	0.85	0.77	1.27	0.96	0.18	0.39	0.20
12	Orissa	1.15	0.73	0.62	0.91	0.52	0.65	0.39	0.16	0.25	0.47
13	Punjab	0.73	1.80	0.98	0.97	0.78	1.02	1.95	0.14	0.11	0.00
14	Rajasthan	0.92	1.29	0.80	0.79	0.50	0.94	1.54	0.05	0.15	0.00
15	Tamil Nadu	0.77	0.83	0.85	0.84	0.78	0.88	0.95	0.34	0.47	0.24
16	Uttar Pradesh	0.86	1.18	0.82	0.70	0.76	0.91	1.05	0.11	0.32	0.04
17	West Bengal	0.89	0.76	0.50	0.77	0.62	1.03	0.53	0.43	0.33	1.15
18	Delhi	0.68	1.19	0.98	0.88	1.29	1.12	1.75	0.18	0.35	0.16
19	Chandigarh	0.69	1.50	1.16	0.97	1.22	1.15	2.11	0.23	0.17	0.00
20	Pondicherry	0.76	0.74	0.83	0.89	0.62	0.97	0.93	0.41	0.35	0.57
	All India	0.83	1.11	0.83	0.81	0.71	1.09	1.02	0.19	0.32	0.29

Source: GOI, National Sample Survey Organization, 2001a.

The consumption of sugar was above the ICMR norm in 11 out of 20 states. Sugar consumption in all the other states varied between 74 and 98 percent of the requirement. The lowest level of sugar consumption per capita, at about 74 percent, was in Assam. Edible oil consumption was above the prescribed norm in eight out of 20 states. Most of the calorie decrease caused by less than the recommended level of cereal consumption in the average urban diet in many states was compensated by higher levels of consumption of other energy foods, particularly sugar, edible oils and probably milk fats. Average calorie consumption was higher in wealthier states, such as Punjab and Haryana, with fewer cereals and more fats and sugar. The average urban consumption of poorer states such as Orissa and Bihar contained more cereals in the diet.

Food intake of the urban lower-income classes

It has been found that for urban India as a whole and also for many states across the urban expenditure classes, cereal consumption has been declining since the 1970s. This trend is clear from the National Sample Surveys (NSS). The average urban Indian's per capita monthly consumption of cereals decreased from 11.36 kg in 1970 to 1971 to 10.63 kg in 1993 and 1994, and further to 10.42 kg in 1999 to 2000. In 1993 to 1994, cereal consumption by the lowest 10 percent was 9.51 kg per capita per month. It marginally increased to 9.55 kg in 1999 to 2000. However, despite this increase, the calorie intake of the lowest 10 percent decreased over the same period, from 1 893 kcals per consumer unit to 1 889 kcals. Many others who have analysed the NSS data have also noticed the decreasing trend even for the lower expenditure classes (Radha Krishnan, 2002).

Decreases in average cereal consumption are not of concern, as the average calorie intake of the urban population in all the states was found to be fairly high and above 2 100 kcals, both in 1993 to 1994 and in 1999 to 2000. Before the calorie data are analysed, some explanations are in order. The consumption data for 1999-2000 have been alleged to be overestimated. However, what is striking is that despite this bias towards overestimation, the actual calorie intake of the lowest deciles in many states was quite low and below acceptable levels.

In all the states the lowest 10 percent consumed less cereal than the average for the state itself. This is an alarming trend, since it means no growth in calorie intake. The average calorie intake for the lowest 10 percent in the urban areas for the country as a whole has remained stagnant. At least for the poor, cereal consumption and calorie intake go together, since cereals provide the major part of the calories consumed (Table 5). The per capita monthly cereal consumption of the poorest 10 percent was lowest in Kerala at 6.93 kg. It was also low in Gujarat, Haryana, Tamil Nadu, Pondicherry, Karnataka and Uttar Pradesh at about 8 kg per capita per month.

TABLE 5
Cereal consumption and calorie intake (urban areas)

Serial no.	State	Cereal consumption of the lowest 10 percent	Cereal consumption for all classes	Calorie intake by the lowest 10 percent	Calorie Intake by all classes	Cereal consumption of the lowest 10 percent	Cereal consumption for all classes	Calorie intake by the lowest 10 percent	Calorie intake by all classes
		(1999-2000)				(1993-1994)			
		(kg/month)	(kg/month)	(kcal/cu/ day)*	(kcal/cu/ day)	(kg/month)	(kg/month)	(kcal/cu/ day)	(kcal/cu/ day)
1	Andhra Pradesh	9.67	10.94	1 842	2 508	9.64	11.30	1 768	2 455
2	Assam	10.68	12.26	1 876	2 630	10.65	12.05	1 950	2 543
3	Bihar	9.87	12.70	1 813	2 645	10.48	12.82	1 860	2 667
4	Gujarat	7.62	8.49	1 829	2 518	7.89	8.96	1 744	2 491
5	Haryana	7.66	9.36	1 692	2 665	9.19	10.46	1 886	2 616
6	Himachal Pradesh	10.47	10.33	2 222	3 218	12.47	11.01	2 366	2 914
7	Jammu and Kashmir	11.51	12.84	2 357	5 955	11.48	11.48	2 397	2 950
8	Karnataka	8.57	10.21	1 776	2 494	8.39	10.87	1 662	2 485
9	Kerala	6.93	9.25	1 581	2 498	7.18	9.46	1 549	2 445
10	Madhya Pradesh	9.51	11.09	1 867	2 904	10.17	11.32	1 917	2 556
11	Maharashtra	9.74	9.35	1 867	2 484	9.43	9.37	1 835	2 432
12	Orissa	13.03	14.51	2 100	2 802	11.39	13.36	1 962	2 754
13	Punjab	8.06	9.21	1 979	2 667	7.96	9.01	1 903	2 569
14	Rajasthan	10.19	11.56	2 071	2 869	10.35	11.52	1 983	2 704
15	Tamil Nadu	8.04	9.65	1 676	2 509	7.28	10.05	1 442	2 366
16	Uttar Pradesh	8.83	10.79	1 765	2 610	9.91	11.08	1 890	2 615
17	West Bengal	10.03	11.17	1 900	2 597	10.56	11.64	1 914	2 587
18	Delhi	7.96	8.61	1 943	2 623	7.35	8.99	1 758	2 895
19	Chandigarh	7.03	8.74	1 803	2 741	8.34	9.00	1 946	2 839
20	Pondicherry	8.20	9.62	1 665	2 441	7.94	10.27	1 545	2 440
	All India	9.55	10.42	1 890	2 637	9.51	10.63	1 893	2 542

*kcal/cu/day = kilocalories/consumer unit/day.
Source: GOI, National Sample Survey Organization, 2001b,c; 1995; 1997.

The calorie consumption of the poorest deciles across the states was high only in Himachal Pradesh, Jammu and Kashmir, Orissa and Rajasthan. Even if 1 900 kcals are considered a reasonable level of consumption per consumer unit per day for moderate urban workers, only the poorest in the Punjab, Delhi and West Bengal qualified as having an adequate food intake. In many states, low levels of calorie intake accompanied lower levels of cereal consumption. Particularly low levels of cereal consumption and calorie intake by urban lower-income groups were seen in Andhra Pradesh, Karnataka, Tamil Nadu, Pondicherry, Kerala, Maharashtra, Gujarat, Madhya Pradesh, Uttar Pradesh, Chandigarh, Assam and Bihar.

The shortfall of calories consumed over the adopted norm indicates the depth of hunger. It can therefore be said that the urban poor in the states mentioned above experience various depths of hunger. Kerala, with the lowest level of 1 580 kcals and Tamil Nadu, with 1 675 kcals per consumer unit per day, show grave hunger. We considered 1 890 kcals per consumer unit per day as the acceptable level of calorie intake for urban people and estimated the percentage of population consuming less than this level. Consumer unit is more appropriate than person as a unit, since it is adjusted for sex and age composition.

The cutoff point of 1 890 kcals chosen was higher than the FAO figure of 1 810 chosen in calculations for the number of hungry. This was adjusted for the sex and age composition of India (FAO, 2000). It constitutes 70 percent of the international norm of 2 700 kcals.

In urban India as a whole, 13.4 percent of the population consume less than 1 890 kcals.[7] The percentage varies between 1.40 percent in Jammu and Kashmir to 19.10 percent in Tamil Nadu. In Delhi about 10.5 percent of the population consume less than this norm. A possible explanation for the falling calorie intake of the lowest deciles is the widespread unemployment and the adverse impacts of globalization.

Some economists do not take the problem of low levels of consumption by the lower deciles seriously; average consumption is given more importance. They observe that the slowdown in cereal demand is a result of changes in the tastes and preferences of the people. Wherever infrastructure developments and prosperity related to globalization and imports themselves make more of the other food items available, cereal consumption decreases. It is argued that this is not a sign of deterioration in human welfare (Rao, 2000). The demonstration effect and the availability of a variety of foods, some of which may be more nutritious than cereals, could be some of the reasons for an increase in the cost of calories consumed by the urban poor.

Another important point is that those consuming diets deficient in calories are not able to utilize the other nutrients effectively since, in the absence of sufficient calories, protein and other nutrients are not well utilized. Furthermore, many micronutrients are better absorbed by the body only if a balanced diet sufficient in calories is eaten. Varieties of foods that enhance the absorption of nutrients are ideal. For example, the absorption of iron improves if there are traces of vitamin C in food. Hence, the bottom line for better nutritional status is the minimum calorie intake per consumer unit. Sufficient calories should be consumed, and it is advantageous if they come from a variety of foods.

We may conclude that globalization has not helped the urban poor to improve their consumption via increased incomes as expected. The data show that while the rich may have benefited from globalization and prosperity, the poor have lost out. Job and income losses have caused the poor to eat less. We cannot attribute the decrease in calorie intake by the urban poor entirely to globalization.

Imported essential food items have undoubtedly improved food availability. Imports of pulses and edible oils, for example, seem to have particularly benefited the urban rich rather than the urban poor.

NUTRITIONAL STATUS OF THE URBAN POPULATION

Nutritional disorders in children

Nutritional problems can occur across all expenditure classes for both rich and poor when diets are unbalanced. The risk for those with protein calorie malnourishment is higher than for others. Protein-energy malnutrition can impair the immune system, leaving malnourished children less able to battle common diseases such as measles and diarrhoea. Unbalanced diets lead to many deficiencies and result in growth disorders. In India only 49 percent of the people consume iodized salt and 167 million people are at risk of iodine deficiency disorders (GOI Micronutrient Initiative and UNICEF, 1997). About 52 percent of women were found to have anaemia out of the 88 percent women covered by national family health surveys (International Institute of Population Sciences, 2000).

[7] The estimates of number of hungry by FAO are based on the calorie supply and its distribution across the expenditure classes, based on certain assumptions. Our estimates are directly based on the sample survey and hence there is a discrepancy in the percentage of hungry.

Undernutrition that occurs during childhood, adolescence and pregnancy has an additive negative impact on the birth weight of infants. These infants are more likely to be underweight or stunted in early life. Undernutrition in early childhood has serious consequences. Underweight children tend to have more severe illnesses, including diarrhoea and pneumonia.

Underweight children under five years of age can be classified as severely underweight and moderately underweight. Children whose weight for age Z score is below three standard deviations of the National Centre for Health Statistics (NCHS)/World Health Organization (WHO) international reference curve are classified as severely underweight. Those having a weight for age Z score below two standard deviations of the reference curve are classified as moderately underweight. Stunted children (low height-for-age) are similarly classified as severely stunted and moderately stunted.

In urban India, 15.4 percent of children are severely stunted and 35.6 percent moderately stunted; about 11.6 percent of children are severely underweight and 38.4 percent are moderately underweight. In the case of the percentage of severely stunted children under three years of age, Bihar was in the worst position with 24 percent, followed by Uttar Pradesh with 22 percent, Rajasthan with 21 percent and Assam with 20 percent. Kerala occupied the best position in this regard with only 7 percent of severely stunted children under three years of age. Andhra Pradesh and West Bengal were in the next best position with 9.3 and 9.5 percent respectively (Table 6).

Madhya Pradesh had the largest percentage of severely underweight children under three years of age with 19 percent. Orissa and Uttar Pradesh followed with a figure close to 16 percent. Kerala, Punjab, Assam and Andhra Pradesh were at the other end of the scale with 2.9 to 7 percent of severely underweight children under three years of age.

TABLE 6
Underweight, stunting and wasting (urban India), 1998-1999

Serial no.	State	Underweight (-3 SD)	Stunting (-3 SD)	Wasting (-3 SD)	Underweight (-2 SD)	Stunting (-2 SD)	Wasting (-2 SD)
1	Andhra Pradesh	6.8	9.3	0.4	28.6	29.7	7.6
2	Assam	6.5	20.2	1.6	27.3	37.1	10.4
3	Bihar	12.1	24.2	3.8	47.4	42.2	17.1
4	Gujarat	9.4	18.8	2.1	38.1	38.5	11.3
5	Haryana	7.6	18.1	1.0	31.3	40.3	5.5
6	Himachal Pradesh	_	_	_	_	_	_
7	Jammu and Kashmir	_	_	_	_	_	_
8	Karnataka	_	_	_	_	_	_
9	Kerala	2.9	7.1	0.7	22.4	18.5	10.9
10	Madhya Pradesh	19.5	19.6	4.0	44.3	39.8	17.3
11	Maharashtra	10.9	11.1	1.6	44.1	33.3	15.7
12	Orissa	16.7	14.3	3.6	45.3	37.0	23.6
13	Punjab	6.1	11.4	0.5	18.6	29.4	7.4
14	Rajasthan	15.1	21.4	1.3	46.0	44.0	8.6
15	Tamil Nadu	9.6	11.8	4.5	33.5	27.1	20.6
16	Uttar Pradesh	16.3	21.8	2.4	42.6	46.7	9.5
17	West Bengal	9.3	9.5	0.8	31.5	25.5	11.1
18	Delhi	10.1	18.0	4.1	34.7	36.8	12.5
19	Chandigarh	_	_	_	_	_	_
20	Pondicherry	_	_	_	_	_	_
	All India	11.6	15.4	2.2	38.4	35.6	13.1

Source: International Institute of Population Sciences, 2000 (Table 7.10).

Problem of obesity of the non-poor

Obesity is a condition where there is excessive accumulation of fat in the body. It can occur among all classes, not necessarily only in the affluent ones. The main reasons for obesity are sedentary lifestyles and a large intake of calories. A body mass index (BMI) of more than 30 is the main indicator of obesity. Obesity data are scarce for urban India. Information on adult BMI is available for rural areas from the National Nutrition Monitoring Bureau, but not for urban areas. A few case studies are occasionally conducted in the urban sector. It is not possible to generalize for the country as a whole.

The Nutrition Foundation of India (1999) conducted a reliable survey in Delhi. Its study reveals that obesity prevails mostly among the middle class. One percent of men and 4 percent of women in the slums are found to be obese. Among the middle classes, 32.2 percent of men and 50 percent of women are obese (Nutrition Foundation of India, 1999). [8]

[8] See also Kamla Krishnaswamy, 1999.

Obesity was higher in the age group of 40 and above. Obesity of the middle classes is prevalent in all the developed countries. The proportion for European countries appears to be higher than India at 50 percent, but India is catching up fast without the same level of affluence.

The prevalence of abdominal adiposity was higher than overweight and obesity. Forty-nine percent of males and about 35 percent of females had abdominal adiposity (Nutrition Foundation of India, 1999).

While we cannot attribute all the blame for obesity on globalization, it is a definite consequence of a shift in dietary patterns, with more sugars, fats and carbohydrates. Processed and ready to eat foods available on the market may have contributed to the increase in obesity.

CONCLUSION

We may conclude that the impact of globalization on low-income groups has been one of undernourishment because of the failure to create more jobs and provide higher incomes. Its impact on the middle- and higher-classes is increased consumption of high-calorie foods and increased incidence of obesity. A dietary pattern devoid of balanced diets across all classes is responsible for the incidence of micronutrient deficiencies and related problems such as iodine deficiency disorders, anaemia and growth disorders in children. The situation requires a three-pronged strategy of nutrition education, food fortification and enhanced safety nets for the poor.

Bibliography

Bhushan, R. & Damodaran, H. 2001. Will Amul's pizzas trigger a price war? *Hindu Business Line,* 3 August 2001 (www.thehindubusinessline.com/).
Food and Agriculture Organization of the United Nations. 2000. *The State of Food Insecurity in the World*. Rome.
Government of India (GOI), Micronutrient Initiative & UNICEF. 1997. Strategy for elimination of micronutrient malnutrition in India. Proceedings of the workshop held in Jaipur from 1 to 2 November 1995.
GOI, Ministry of Food Processing Industries. 2003. *Annual report 2002-03.* New Delhi.
GOI, Ministry of Statistics and Programme Implementation. 2001. *Economic Census 1998. All-India Report.* New Delhi. May.
GOI, National Sample Survey Organization. Ministry of Statistics and Programme Implementation. 1995. *Employment and unemployment situation in India***,** 1993-94. NSS 50th Round Report No. 402. New Delhi.
GOI, National Sample Survey Organization. Ministry of Statistics and Programme Implementation. 1997**.** *Sarvekshana,* Vol. XXI, No. 2, October-December. New Delhi.
GOI, National Sample Survey Organization. Ministry of Statistics and Programme Implementation. 2001a. *Consumption of some important commodities in India, 1999-2000.* NSS 55th Round Report No. 461. New Delhi.
GOI, National Sample Survey Organization. Ministry of Statistics and Programme Implementation. 2001b. *Level and pattern of consumer expenditure in India, 1999-2000.* NSS 55th Round Report No. 457. New Delhi.
GOI, National Sample Survey Organization. Ministry of Statistics and Programme Implementation. 2001c. *Nutritional intake in India, 1999-2000.* NSS 55th Round Report No. 471. New Delhi.
GOI, Planning Commission. 2001. *Report of the task force on employment opportunities.* New Delhi. (mimeo)
GOI, Planning Commission. 2002. *Tenth Five-Year Plan 2002-2007.* New Delhi (www.planningcommission.nic.in/plans/planrel/fiveyr/welcome.html).
International Institute of Population Sciences. 2000. *National Family Health Survey 2, 1998-99*. Mumbai, India.
Kamla Krishnaswamy. 1999. *Obesity in urban middle classes.* New Delhi, Nutrition Foundation of India.
Nutrition Foundation of India. 1999. *Investigation of current prevalence, nature and etiology of obesity in urban communities.* New Delhi (www.nutritionfoundationofindia.org/research4.asp).
Pizzamarketplace.com. 2003. Pizza continues slicing into India restaurant market. News story, 14 July (www.pizzamarketplace.com/news_story_16186.htm).
Radha Krishnan, R. 2002. Food and nutrition security. *In K.* Parikh & R. Radha Krishnan, eds. *India Development Report 2002*. India, Oxford University Press.
Rao, Ch. Hanumanth. 2000. Declining demand for food grains in rural India: implications. *Economic and Political Weekly,* 35(4).
Times News network. 2003. Vyas: power behind the Amul brand. *The Economic Times, 7* May (www.economictimes.com/).

Globalization, food consumption, health and nutrition in urban areas: a case study from the Philippines

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INTRODUCTION

The last 30 years witnessed rapid urbanization in the Philippines, from 32 percent in 1970 to 54 percent in 1995. At present, 59 percent of the population lives in urban areas, with a recorded growth of 5.14 percent. This total is expected to increase to 68 percent in 2015 (Florentino, Pedro and Molano, 1996; Population Commission, 2002). Much of the growth of the urban population in the last ten years can be traced to efforts in opening up the Philippine economy.

Some of the most important trends with regard to globalization include: i) the rapid rise in trade, with increasing export orientation; ii) growth of the services sector, e.g. information and communication, finance and insurance, tourism and transportation; and iii) the increasing borderlessness of production and consumption (Ofreneo, 1997). The opening up of the country's economy through various liberalization efforts and the growth of the services sector have significantly affected the agriculture sector, and contributed to the acceleration of urbanization and its consequences.

Although the motive force of globalization has been primarily economic, it has penetrated other realms that may also have had significant impacts on the Filipino people's food consumption patterns and nutritional status. Cultural influences from the developed nations, including affluent lifestyles and overconsumption, are being transmitted daily by means of television, advertising, tourism and education. Consequently, lifestyle-related diseases have been closely associated with globalization.

This paper seeks to identify the impacts of globalization and urbanization on food consumption, health and nutrition in order to identify strategies and interventions to protect the health and nutrition of the population.

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TABLE 1
Urbanization trends in the Philippines

Indicators	1960	1970	1975	1980	1990	1995	2001
Urban percentage	29.8	31.8	33.3	37.2	48.6	54.1	59.1
Urban growth (%)	2.7	4.0	3.0	4.9	5.0	5.0	5.14
Rural growth (%)	2.5	2.6	2.6	1.5	0.3	0.3	-

Source: Population Commission, 2002.

Demographic profile and urbanization trends

The Philippines had an estimated population of 82 million in 2003. This rose from 76.5 million in 2000 and 68.8 million in 1995, at a growth rate of 2.36 percent per year since 1995 (National Statistics Office, 2000). The population growth is 3.3 percent in Metro Manila and 1.0-1.7 percent in the other regions. In Metro Manila, the population stood at 200 000 at the turn of the twentieth century, and ballooned to 9.9 million in 1999. This metropolitan region now constitutes 13 percent of the country's population. Population projections of the National Statistics Office, based on the 1995 census, show that the Philippine population will grow to 106 million in 2020. Metro Manila is predicted to reach 19 million in the year 2016.

The rapid population growth in the country is explained by the transition from high to low mortality, and continued high fertility. The Philippines' infant mortality rate has improved from 45 to 30 per 1 000 live births, while life expectancy at birth has increased from 67 to 71 years for females and 64 to 65 years for males, from 1990 to 2000. Actual fertility is one and a half births more than replacement fertility, and one birth more than the desired fertility (Duque, 2003).

In the metropolitan areas, the congestion – from 10 717 to 50 042 persons per km^2 in areas of central Manila, and an average of 15 617 persons per km^2 for the region, as against 566 persons per km^2in rural areas (Asian Development Bank, 2000) – is also a significant result of massive rural to urban migration. Since the 1980s, approximately 300 families have been migrating each month to Manila from the provinces, contributing to the expansion of squatter colonies. In Metro Manila, there are approximately 591 of these colonies (Lamberte, 2000). There also has been an emergence of new "metropolises", in addition to Metro Manila, in other regions of the country, including Metro Cebu, Bacolod and Iloilo in the Visayas and Metro Davao, Cagayan de Oro and General Santos City in Mindanao. Overall, it has been estimated that 35 percent of the urban population are squatters and slum-dwellers.

Table 2 presents the in- and out-migration picture in Metro Manila and the other regions of the country for the period 1985 to 1990, revealing a net emigration from ten out of the 15 regions probably to Metro Manila and the industrial zones in the Southern Tagalog region and the growth centres in Cagayan de Oro (Northern Mindanao region) and Davao (Southern Mindanao region). For most of these regions, females outnumbered males as out-migrants, many of them being deployed as overseas Filipino workers (OFWs), while there were more male migrants to the industrial/growth centres in the Southern Tagalog and Northern and Southern Mindanao regions. According to the Philippine Overseas Employment Agency, a significant number of OFWs have been deployed to various countries, mostly in the Middle East (45 percent), Asia (42.5 percent) and Europe (7 percent). For 2002, the number of OFWs on record was 891 908, an increase of 2.8 percent from the total deployment in 2001 (Reyes, 2003).

TABLE 2
Net migration rate by region and gender, 1985-1990, per thousand population

Region	Male	Female
Metro Manila	10 161	29 291
Cordillera Adm. region	- 2 118	- 1 877
Northern Luzon	- 7 088	-10 272
Cagayan Valley	- 6 360	-12 892
Central Luzon	2 397	2 548
Southern Tagalog	22 085	20 174
Bicol	-24 699	-31 248
Western Visayas	-10 473	-15 960
Central Visayas	- 9 619	-11 749
Eastern Visayas	-17 930	-25 936
Western Mindanao	- 2 483	- 5 184
Northern Mindanao	8 074	3 579
Southern Mindanao	5 186	1 867
Central Mindanao	- 6 149	- 8 294
Adm. Region of Muslim Mindanao	- 5 332	- 4 904

Source: 1995-based national and regional population projections (cf. Reyes, 2003).

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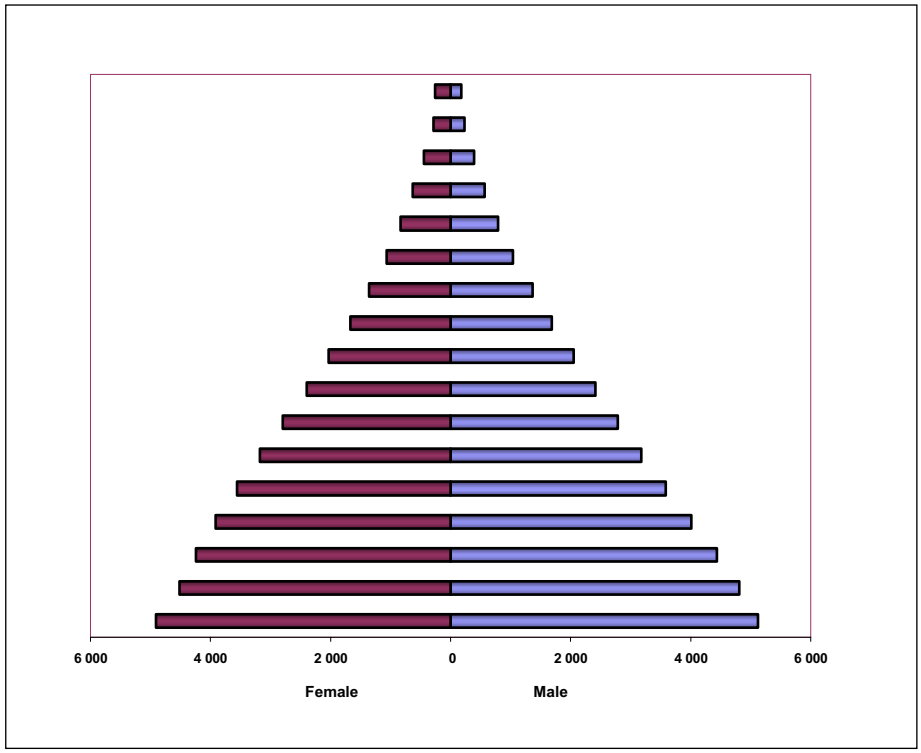
The Philippines' population structure reveals a high dependency ratio (Figure 1), and is expected to make the demographic transition between 2015 and 2025, when the elderly population becomes more significant (Asian Development Bank, 2000; Duque, 2003).

As the country moves towards a demographic transition, and the labour force increases, there has, however, been no significant increase in employment. The unemployment rate has been high, and increased from 8.9 percent in 1993 to 10.1 percent in 2000. In April 2003, the unemployment rate was placed at 12.6 percent, or 4.3 million Filipinos, based on a recent labour survey by the National Statistics Office.

Meanwhile, agriculture remained the major area of employment, even though the number and the proportion of those employed in the sector decreased between 1993 and 2000 (Table 3). Employment in the manufacturing sector, on the other hand, has increased, while job creation in the services sector has been significant. With regard to gender, more women are slowly being drawn into the labour force, particularly in the services sector.

FIGURE 1
Population pyramid of the Philippines, 2000
(per '000 population)



Source: Templo, 2003.

TABLE 3
Labour and employment statistics, 1993-2000

	1993	1995	2000
Labour force	26 822 000	28 040 000	30 908 000
Employed	24 443 000	25 698 000	27 775 000
Agriculture	11 194 000	11 323 000	10 401 000
Manufacturing	2 455 000	2 571 000	2 792 000
Unemployed	2 379 000	2 342 000	3 133 000
Unemployment rate (%)	8.9	8.4	10.1

Source: Asian Development Bank, 2002.

Nearly a third (28.4 percent) of families in the Philippines were poor in 2000 – defined as having an income below the level required to sustain a minimum food and non-food bundle. Poverty improvement has been confined to urban areas, where the incidence dipped significantly from 30.1 percent in 1988 to 19.9 percent in 2000 (Templo, 2003). Nearly 75 percent of the poor lived in the rural areas in 2000, and approximately half (41.4 percent) of rural families lived below the poverty line (Templo, 2003).

Other indicators of globalization

The effects of globalization have also been in terms of trends in information communication and technology and transportation, enhancing cross-cultural influences with regard to consumption patterns and lifestyles as well as transmission of diseases. With regard to crime, Metro Manila contributes significantly to the total reported crime cases against property as well as non-index cases.

Crime in the Philippines has been extensively linked to the increasing problem of drug use. In 1999, 83 drug syndicates (including transnationally organized ones), with a membership of approximately 560 000 drug pushers operated in the country. Related transnational crimes are the trafficking and smuggling of persons, terrorism and smuggling of firearms, and piracy of intellectual property rights, among others.

TABLE 4
Other indicators of globalization

	1995	2001	2002
Information communication and technology[1]			
Internet users ('000)	-	2000[2]	-
Main telephone lines (per 1 000 households)	21	40	-
Mobile phone subscribers ('000)	1 344[3]	12 159	-
Total estimated PCs ('000)	-	1 700	-
(per 100 households)	1.2	2.2	-
TV/CATV networks	1 053[3]	1 432	-
Transportation[4]			
Registered motor vehicles	-	3 865 862	4 182 673
Crime [5]			
Crime against persons[6]			
Philippines	28 670	23 634	25 706
Metro Manila	3 933	2 589	3 168
Crime against property[7]			
Philippines	13 341	14 407	18 054
Metro Manila	5 331	6 147	5 315

[1] *Source*: National Telecommunications Commission.
[2] 2000.
[3] 1997.
[4] *Source*: Land Transportation Office, Department of Transportation and Communication.
[5] *Source*: Philippine National Police; includes reported cases.
[6] Includes murder, homicide, physical injury, and rape.
[7] Includes robbery and theft.

ROLE OF GLOBALIZATION AND URBANIZATION ON DIETARY CHANGE

Evolution of the urban food supply

Globalization has had significant effects on the food supply. The most important of these is the increase in the importation of agricultural commodities.

Three food commodities where imports have contributed significantly are dairy products, cereals, and fats and oils. Imports contributed >50 percent of the total supply of milk and milk products from 1993 to 1999. Next to dairy products, 20-30 percent of the

total supply of cereals and cereal products between 1993 and 1999 came from importation (Table 5).

Rice is the country's staple – importation peaked in 1998, at 31 percent of the total rice supply (versus practically 0 percent in 1993, and 11 percent in 1996 and 1999), to make up for low production during the year. Domestic production of corn, starchy roots and tubers, sugars and vegetables was also lowest in 1998.

Wheat flour imports, with the growing importance of bread and bakery products in the Filipino diet, have contributed >50 percent of the domestic supply since 1996. For nearly all food commodities, except milk and milk products and eggs, the contribution of imports to the total supply, by commodity, grew sharply after 1993. These included fats and oils, starchy roots and tubers, fruit and vegetables, meat and meat products, fish and other marine products. For milk and milk products and eggs, the contribution of imports was relatively steady from 1993 to 1999.

TABLE 5
Food importation and contribution percentage to total domestic food supply by commodity, the Philippines, 1993-1999

	Imports (in tonnes)				% of total domestic supply			
Commodity	**1993**	**1996**	**1998**	**1999**	**1993**	**1996**	**1998**	**1999**
Cereals and cereal products	3 652 098	3 244 959	4 181 426	3 153 148	25.0	18.8	28.2	18.3
Rice	111	862 384	2 170 835	836 378	0.0	10.8	31.3	10.8
Wheat flour	19 354	1 921 523	1 392 467	1 958 666	1.3	55.8	55.6	55.6
Starchy roots and tubers	1 659	20 292	19 508	25 675	0.1	0.6	0.7	0.9
Sugar and syrups	28 136	259 554	466 250	172 018	0.1	1.0	2.3	0.7
Pulses and nuts	91 806	194 413	202 071	343 243	0.8	1.7	1.7	3.1
Vegetables	7 012	22 243	40 835	57 022	0.3	0.8	4.4	6.0
Fruit	72 250	133 372	126 700	176 305	1.1	1.7	2.0	2.9
Fats and oils	21 487	45 244	46 902	89 740	6.9	13.4	14.1	24.0
Miscellaneous	30 809	49 088	55 034	42 434	0.9	1.2	1.1	1.0
Meat and products	1 467	9 556	183 611	130 302	0.1	0.4	6.4	4.5
Fish and other marine products	665	5 616	117 629	177 621	0.0	0.2	3.1	4.6
Milk and products	139 090	179 666	173 659	206 213	53.7	55.6	56.6	57.3
Eggs	3 796	3 139	3 142	2 857	1.5	1.2	1.1	1.0

Source: Philippine Institute of Development Studies, 2003.

While domestic production in general did not grow at the same rate as the population, the country managed to maintain its total domestic food supply at 1 000-1 200 g per capita/day from 1993 to 1999. This translated to about 2 000 kcals of energy available per capita/day in 1993, and 2 200-2 400 kcals per capita/day from 1996 to 1999, distribution patterns, food losses and wastage notwithstanding (Table 6). Per capita/day protein supply was 58.8 g in 1993 and 66-69 g per capita/day from 1996 to 1999 (Table 6). The Philippine recommended dietary allowances (RDAs) for energy and protein for the reference male of 20-39 years old are 2 570 kcals and 60 g protein, respectively; while the per capita RDA for energy was estimated at 1 968 kcals in 1995 and 1 979 kcals for 2001, based on the National Statistics Office population structure.

TABLE 6
Per capita food, energy and protein supply, by commodity, the Philippines, 1993-1999

Commodity	1993			1996			1998			1999		
	Per cap/d (g)	Energy (kcal)	Protein (g)	Per cap/d (g)	Energy (kcal)	Protein (g)	Per cap/d (g)	Energy (kcal)	Protein (g)	Per cap/d (g)	Energy (kcal)	Protein (g)
Cereals and cereal products	279.1	945	20.2	367.5	1 227	26.0	311.1	1 055	22.6	332.6	1 147	24.5
Starchy roots and tubers	66.6	103	0.8	65.5	102	0.9	53.2	84	0.7	52.4	84	0.6
Sugars and syrups	46.2	161	0.0	47.7	166	0.0	45.0	162	0.0	45.5	161	0.0
Pulses and nuts	34.1	47	1.6	33.5	48	1.7	33.0	49	1.8	31.1	50	2.0
Vegetables	97.1	46	2.4	100.1	48	2.5	29.8	15	0.8	29.9	15	0.8
Fruit	220.1	138	1.4	253.1	162	1.7	185.4	131	1.3	170.5	123	1.2
Fats and oils	12.4	94	0.0	12.5	95	0.1	11.7	95	0.1	12.5	106	0.1
Miscellaneous	129.7	249	8.0	142.4	244	10.3	171.7	318	12.2	213.6	362	13.4
Meat and products	71.5	138	10.3	80.3	154	11.5	89.9	170	12.9	89.4	171	12.8
Fish and other marine products	96.3	77	11.6	93.6	77	11.4	92.8	75	11.1	93.6	78	11.4
Milk and products	6.2	19	1.3	7.2	21	1.5	6.6	19	1.3	7.7	22	1.5
Eggs	9.2	13	1.0	9.2	13	1.0	9.5	14	1.0	9.4	14	1.0
TOTAL	1 067	2 032	58.8	1 212	2 356	68.6	1 040	2 186	65.8	1 088	2 330	69.3

Source: Philippine Institute of Development Studies, 2003.

Table 7 compares the country's per capita food supply and the mean one-day food consumption in 1993 in Metro Manila, and rural households in selected regions and the Philippines in general. It shows some indication of the distribution of the country's food supply to the urban and rural regions. There have been no food consumption studies in the Philippines since 1993, so it is not possible to show recent trends. The next Food Consumption Survey, among children up to five years old and pregnant and lactating women, is being carried out as one of the components of the 2003 or Sixth National Nutrition Survey by the Food and Nutrition Research Institute, Department of Science and Technology. Table 8 presents the translation of the per capita food consumption of 1993 to energy and nutrients.

With regard to cereals, rice consumption in 1993 was lowest among the urban households of Metro Manila, compared to rural households of the Philippines and in Northern Luzon, Eastern Visayas and the Administrative Region of Muslim Mindanao (ARMM). However, the consumption of other cereals, which included bread and bakery products, was highest in Metro Manila. Like bread and bakery products, the consumption of sugars, fats and oils, fish, meat and poultry, eggs, and milk and milk products was also higher in Metro Manila compared to rural areas. The consumption of green leafy and yellow vegetables in Metro Manila was lower compared to the rural households in the regions presented, except in Eastern Visayas and rural households of the Philippines.

In terms of mean per capita one-day energy and nutrient intake and percentage age adequacy, there are differences between urban (Metro Manila) and rural households. Percentage energy adequacy was lower among households of Metro Manila than rural households, except in Bicol (80.6 percent) and Western Visayas (74.0 percent). Mean

vitamin A intake was adequate in Metro Manila but inadequate among rural households in all regions of the country including Northern Luzon, Eastern Visayas and ARMM. There were no wide differences in the intake of protein, calcium and thiamine between Metro Manila and Northern Luzon.

TABLE 7
Per capita food supply and mean one-day food consumption of Metro Manila and rural households by selected regions, the Philippines, 1993

Food commodity	Per capita food supply (g)	Mean one-day food consumption (g)				
		Metro Manila	Philippines	Northern Luzon	Eastern Visayas	ARMM
Cereals and cereal products	279	293	364	386	394	417
Rice	*212*	*252*	*300*	*368*	*362*	*405*
Other cereals	*12*	*40*	*15*	*15*	*22*	*9*
Starchy roots and tubers	67	12	21	11	18	75
Sugars and syrups	46	23	17	18	16	12
Dried beans and nuts	34	10	8	13	3	2
GLY vegetables	97[1]	18	34	52	15	48
Other fruit and vegetables	220[2]	113	126	152	102	79
Vitamin C-rich fruits		34	26	68	15	8
Beverages and condiments	130	29	16	9	25	8
Fats % oils	12	14	11	10	11	10
Fish, meat and poultry	168	181	133	136	177	111
Eggs	9	16	9	11	6	5
Milk and products	6	86	24	29	17	12
TOTAL	1 068	824				

[1] Includes all vegetables.
[2] Includes all fruit only.
Source: PIDS, 2003; FNRI-DOST, 2001; Molano *et al*., 2003 (unpublished paper).

TABLE 8
Mean per capita one-day energy and nutrient intake and percentage adequacy of households in Metro Manila and rural households in the Philippines and selected regions, 1993

	Metro Manila	Philippines	Northern Luzon	Eastern Visayas	ARMM
Energy					
Intake (kcals)	1 651	1 696	1 808	1 837	1 828
% adequacy	85.7	88.6	95.1	93.3	93.1
Protein					
Intake (g)	52.2	49.1	51.8	55.0	47.3
% adequacy	110.6	104.9	109.0	113.0	96.4
Iron					
Intake (mg)	10.2	9.9	10.8	12.8	9.5
% adequacy	63.0	64.3	72.0	87.2	59.3
Calcium					
Intake (g)	0.41	0.39	0.42	0.36	0.30
% adequacy	70.7	66.1	72.5	62.3	52.1
Vitamin A					
Intake (RE)	582.7	327.9	344.1	249.8	229.5
% adequacy	131.6	73.8	76.3	54.7	50.6
Thiamine					
Intake (mg)	0.74	0.65	0.78	0.65	0.58
% adequacy	75.5	66.3	80.3	65.0	58.1
Niacin					
Intake (mg)	16.8	15.8	17.5	19.8	17.3
% adequacy	91.3	86.3	96.1	104.8	92.6
Riboflavin					
Intake (mg)	0.70	0.51	0.58	0.50	0.40
% adequacy	70.7	52.0	59.1	49.2	40.5
Ascorbic acid					
Intake (mg)	41.9	48.7	76.2	28.7	38.3
% adequacy	65.7	76.6	120.7	44.5	57.1

Source: FNRI-DOST, 2001; Molano *et al*., 2003 (unpublished paper).

The proportion of households with <100 percent per capita energy adequacy was about the same in urban and rural areas (69.6 and 69.2 percent, respectively), while there were fewer urban (42.8 percent) than rural (46.1 percent) households with <100 percent per capita protein adequacy.

Dietary changes from 1978 to 1993

Table 9 presents the trends in the food consumption of Filipino households from 1978, when the First National Nutrition Survey was conducted, to 1993, the Fourth National Nutrition Survey. In examining the data, one should take note of the increasing urbanization of the country, from 32 percent in 1970 to 40 percent in 1980, 50 percent in 1990 and 52 percent at present.

From 1978 to 1993, the daily per capita consumption of cereals, cereal products and vegetables decreased while the consumption of meat, meat products and eggs increased in Philippine households, which include both rural and urban areas (Figures 2a and 2b). There was also a decreasing trend, from 1982 to 1993, in the consumption of starchy roots and

tubers, beverages, condiments, and fish and shellfish, as well as in terms of the total food consumed.

In Metro Manila, there was a trend towards lower intake of sugars, and fats and oils, which are energy-dense food groups. There was also a trend towards lower intake of vegetables, as well as fruit (for the period 1982 to 1993). The trend in the consumption of cereals and cereal products from 1978 to 1993 showed small increasing intakes, which may be attributed to bread and bakery products more than to rice and rice products. As in the general Philippine situation, the trend in Metro Manila was towards increased intake of animal foods and lower intake of plant foods from 1978 to 1993. The trend was also towards increased total food intake from 1978 to 1982 and decreasing total food consumption from 1982 to 1993.

In terms of daily per capita energy and nutrient intakes, there was a trend towards lower energy intake for the Philippines, in general, from 1982 to 1993, as well as for Metro Manila, in particular, from 1978 to 1993 (Table 10). There was also a sustained decreasing per capita intake of calcium and ascorbic acid among households, in general, and in Metro Manila.

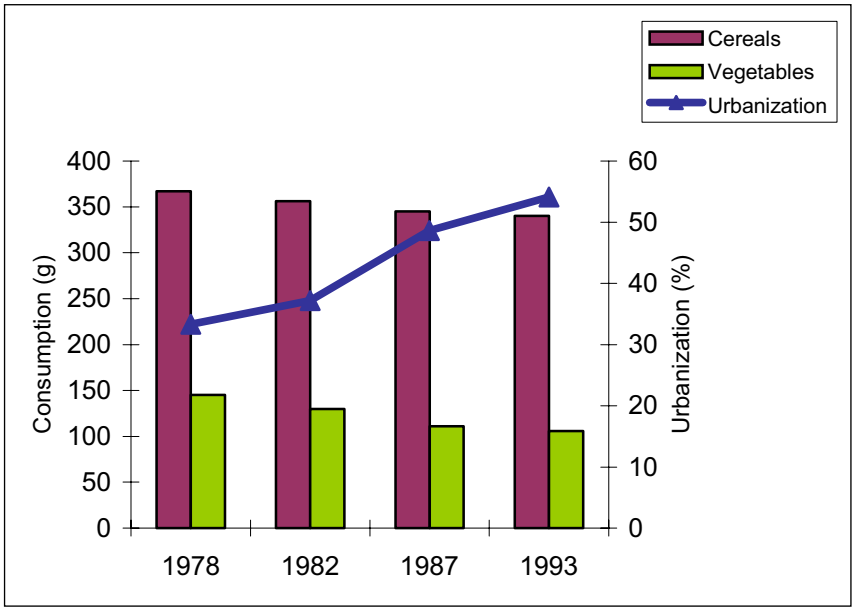
TABLE 9
Trends in per capita food consumption (g), 1978-1993, the Philippines and Metro Manila[1]

Food groups	Philippines				Metro Manila			
	1978	1982	1987	1993	1978	1982	1987	1993
Cereals and cereal products	367	356	345	340	286	287	292	293
Starchy roots and tubers	37	42	22	17	15	18		12
Sugars and syrups	19	22	24	19	50	30	21	23
Dried beans, nuts and seeds	8	10	10	10	10	14	14	10
Vegetables	145	130	111	106	138	120	101	87
Fruit	104	102	107	77	132	162	102	78
Beverages	8	16	12	9	20	37	21	29
Condiments	12	15	14	11				
Oils and fats	13	14	14	12	27	23	17	14
Meat and meat products	23	32	37	48	66	86	83	86
Eggs	8	9	10	12	16	14	14	16
Fish and shellfish	102	113	111	99	106	93	105	95
Milk and milk products	42	44	43	44	74	83	70	86
TOTAL	889	905	860	803	940	967	868	824

[1] 1978 to 1993 data were taken from the Philippines' National Nutrition Surveys (NNS), conducted every five years, by the Food and Nutrition Research Institute, Department of Science and Technology. The 1998 NNS did not have a food consumption survey component.

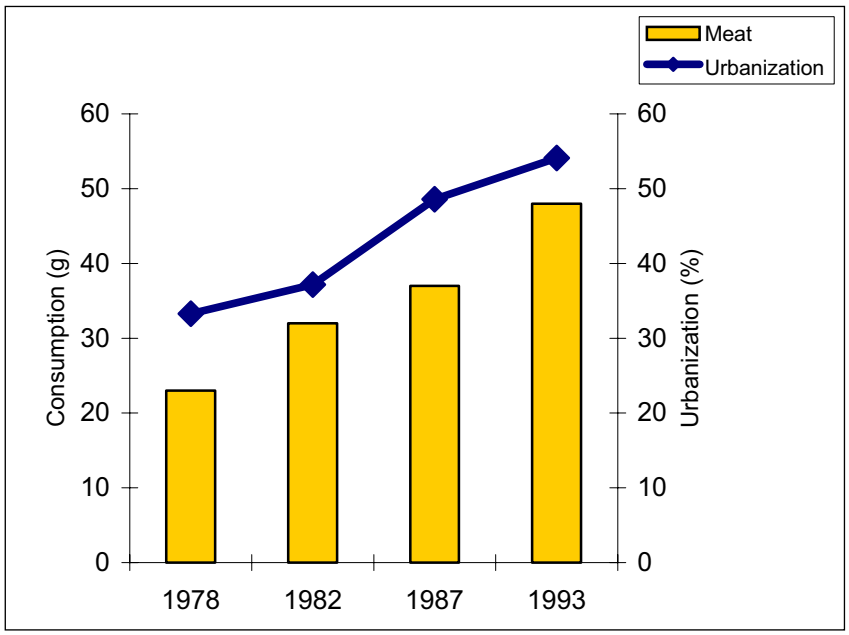
Source: FNRI-DOST, 2001; Molano *et al*., 2003 (unpublished paper).

FIGURE 2a
Cereal and vegetable consumption and urbanization trends, the Philippines, 1978-1993



Source: FNRI-DOST, 2002; National Statistics Office, 2000.

FIGURE 2b
Meat consumption and urbanization trends, the Philippines, 1978-1993



Source: FNRI-DOST, 2002; National Statistics Office, 2000.

TABLE 10
Trends of per capita nutrient intake and adequacy, the Philippines and Metro Manila[1]

	Philippines				Metro Manila			
	1978	1982	1987	1993	1978	1982	1987	1993
Energy								
Intake (kcals)	1 804	1 808	1 753	1 683	1 908	1 797	1 751	1 651
% adequacy	88.6	89.0	87.1	87.8	92.8	87.7	86.4	85.7
Protein								
Intake (g)	53.0	50.6	49.7	49.9	49.6	51.9	50.5	52.2
% adequacy	102.9	99.6	98.2	106.2	94.5	100.8	98.2	110.6
Iron								
Intake (mg)	11.0	10.8	10.7	10.1	10.4	10.6	10.5	10.2
% adequacy	91.7	91.5	91.5	64.7	83.2	85.5	86.8	63.0
Calcium								
Intake (g)	0.44	0.45	0.42	0.39	0.47	0.44	0.43	0.41
% adequacy		80.4	75.0	67.0	85.2	78.6	74.1	70.7
Vitamin A								
Intake (RE)			389.7	391.9			447.2	582.7
% adequacy			75.9	88.1			85.6	131.6
Ascorbic acid								
Intake (mg)	66.8	61.6	53.6	46.7	58.3	55.3	47.6	41.9
% adequacy		91.1	80.0	73.2	85.1	81.3	70.7	65.7

[1] 1978 to 1993 data were taken from the Philippines' National Nutrition Surveys (NNS), conducted every five years, by the Food and Nutrition Research Institute, Department of Science and Technology. The 1998 NNS did not have a food consumption survey component.
Source: FNRI-DOST, 2001; Molano *et al*., 2003 (unpublished paper).

Florentino, Pedro and Molano (1996) attributed the positive trends in 1978 to 1982 to the improved economic situation, and the decreasing food intake from 1982 to 1987 to the economic crisis and fluctuation in food supply during that period. While the Philippine economy started to pick up after 1986, from 1988 to 1990, a period fraught with coup attempts and natural disasters, the country again experienced negative and slow growth through 1993 (Templo, 2003).

Importance of street foods and emergence of fast food chains

Street foods have played an important role in the Filipino diet, especially in urban areas. From the 1970s to the present, the street food trade has evolved into a large and complex food sector that provides both an important means of income for vendors and an affordable source of food for the people. Urban street food vending has provided employment and income for many, and gives economic support to small farmers as an outlet for rural produce. In some cities, such as Iloilo in the central Philippines, up to 25 percent of the labour force is involved in street food vending (De Guzman *et al*., 1987). Most street food enterprises consist of a single person or are household-based, with family members helping to make or sell the product (De Guzman *et al*., 1987). Some vendors also employ one or two paid assistants. Street food vendors/owner-vendors in Metro Manila are mostly migrants from the provinces.

Simple and traditional foods sold by street food vendors include fried and boiled snacks, packed snacks, soups, local cakes, grilled food (mostly meat), sandwiches, eggs, fruit and bakery products, as well as hot and cold beverages. A study by FNRI-DOST revealed that a street food meal can provide a reference adult male (20-39 years old) with 21 percent of

the RDA for energy, and 28 percent of the RDA for protein. A street food snack provides 13 percent and 12 percent of the RDA for energy and protein, respectively.

IMPACT OF GLOBALIZATION ON LIFESTYLES IN URBAN AREAS

Physical activity patterns

Florentino, Villavieja and Laña (2002) studied the dietary and physical activity patterns of schoolchildren in Metro Manila, and noted the following.

- In private (fee-paying) schools in Metro Manila, 31 percent of schoolchildren consume less than 100 percent RDA for energy vis-à-vis 55 percent of schoolchildren from public schools not meeting the requirements.
- In private schools, 17.3 percent consume >150 percent RDA for energy vis-à-vis 7.4 percent in public schools.
- With regard to physical activity, other than sleeping and the hours spent in the classroom, urban schoolchildren in public and private schools spend more than one hour watching television, about one hour doing homework, and half an hour for indoor games. Children in private schools spend more time for homework and indoor games than children in public schools. Indoor games usually include computer and electronic games, board or card games, among others.
- Travel time to school takes from 15 minutes to half an hour. The children commute to school by means of a public or private vehicle, although about half of the public schoolchildren walk. Household chores and outdoor games both take up 30 to 40 minutes each; the public schoolchildren spend more time than children in the private schools in these activities.

While the picture presented above refers to schoolchildren in urban areas, a large proportion of children aged from five to 17 are out of school or partly working to earn money for their tuition as well as help put food on the table. From the October 2001 Survey on Children by the National Statistics Office (NSO, 2003), the national total of working children was estimated at 4 018 million (62.2 percent) of the total number of children aged from five to 17. Of the total working children, 246 000 (6.1 percent) were aged five to nine, 1.9 million (48 percent) were from ten to 14, and 1.8 million (46 percent) belonged to the 15-17 age group. There were more male working children (63 percent) than females, and seven out of ten working children lived in rural areas (about 1.2 million were in urban areas). Fifty-nine percent (59.4) of all working children in the country, and 52.4 percent of the urban working children claim they are exposed to various physical, chemical and biological hazards in their working environment.

There are approximately 1.5 million street children in the Philippines. In Metro Manila alone, there are 50 000 to 75 000. These numbers include children who work on the streets but maintain contact with their families (i.e. at the end of each day they return home) (70 percent); children who see the streets as their home and seek income from them (25 percent); and children who are completely disconnected from their biological families and are abandoned and neglected (5 percent) (Banaag, 1997). Street children live in households below the poverty line and belong to the estimated 2.5 million squatter families in Metro Manila (UNICEF, 1988).

In a survey carried out in Manila, the street children were aged eight to 15, and had been working in the streets for an average of 5.3 years (range = less than one to 15 years). The children earned between US$1.47 and >$4.50 a day and used this money to help augment family income or earn income for their own survival. The street activities they engaged in included street vending, scavenging scrap materials, begging, cleaning cars, and acting as a

"barker" for public utility vehicles (Bacos *et al*., 2002, unpublished paper). Negative and deviant behaviour, such as gambling, use of prohibitive drugs, and adolescent sexual activity were also noted in the same survey and in other studies (Lamberte, 2000).

Smoking

In 1994, the Philippines produced 85 360 million cigarettes or 1.6 percent of the world's total production. The annual average per capita consumption of an adult (aged 15 and above) increased from 2 010 manufactured cigarettes in 1970 to 1972, to 2 110 manufactured cigarettes in 1980. Consumption fell to 1 770 manufactured cigarettes in 1992.

Two sources of data show that smoking prevalence was 33 percent in 1998 (Duante *et al*., 2001) and 23.5 percent in 2000 (Tiglau, Baltazar and Baquiloid, 2001).

PREVALENCE OF MALNUTRITION IN URBAN AREAS

Nutritional status of children

Tables 11 and 12 show the trends in the nutritional status of preschool and school-age children in the Philippines, and in Metro Manila alone, from 1989/90 through 2001.

TABLE 11
Trends in the nutritional status of preschool and school-age children, the Philippines

	Prevalence (percentage)					
	1989/90	**1992**	**1993**	**1996**	**1998**	**2001**
Up to five years old						
Underweight	34.5	34.0	29.9	30.8	32.0	30.6
Stunting	39.9	36.8	34.3	34.5	34.0	31.4
Wasting	5.0	6.6	6.7	5.2	6.0	6.3
Overweight for age	0.6	0.7	0.4	0.5	0.4	1.0
Six to ten years old						
Underweight	34.2	32.5	30.5	28.3	30.2	32.9
Stunting	44.8	42.8	42.2	39.1	40.8	41.1
Overweight for age	0.1	0.2	0.6	0.4	neg	0.8

Source: FNRI-DOST, 2002.

There was a declining trend in the prevalence of underweight (weight-for-age) of children up to five years old, from 1989/90 through 2001, over a time span of 11 years. A reduction of 3.9 percentage points in the estimate of underweight, during the 11-year period, or an average of a 0.35 percentage point a year, indicates that the change in the national nutrition situation among children has been rather slow. A declining trend in the prevalence of stunting or chronic malnutrition in children up to five has likewise been reported with an average reduction of less than 1 percentage point a year. The picture of acute malnutrition (wasting) among these children has not improved through the 11-year period. The estimate in fact increased from 5.0 percent in 1989/90 to 6.7 percent in 1993, and showed very slight improvement in 2001 (6.3 percent). Among the school-age children, the trends were about the same as those of the preschool children.

A declining trend in the prevalence of underweight in children up to five years old was also recorded in Metro Manila for the period 1989/90 through 2001. The reduction of 8.3 percentage points in the prevalence of underweight for these children indicates that the

improvement in the nutrition situation was faster in this urban region than at the national level. The picture of acute malnutrition did not improve. Among street children in Manila, the survey mentioned earlier noted that the prevalence of underweight-for-age in this group of high-risk children was 45.7 percent (Bacos *et al*., 2002). The proportion who fell ill with infections (including respiratory and eye diseases) in the month prior to the survey period was 40 percent; 70 percent reported minor discomforts and pains (Bacos *et al*., 2002).

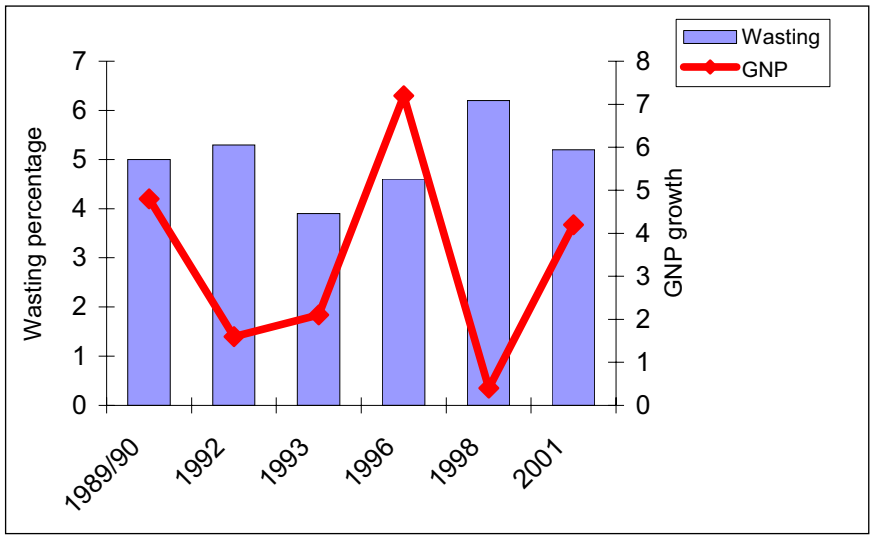
As shown in Figures 3 and 4, the trends in underweight and wasting among children are clearly associated with the country's "boom-bust" pattern of growth.

TABLE 12
Trends in the nutritional status of preschool and school-age children, Metro Manila, the Philippines

	Prevalence (percentage)					
	1989/90	**1992**	**1993**	**1996**	**1998**	**2001**
Up to five years old						
Underweight	28.6	27.8	29.8	23.0	26.5	20.3
Stunting	27.9	28.8	30.0	22.8	25.7	20.0
Wasting	5.0	5.3	3.9	4.6	6.2	5.2
Overweight for age	1.7	1.4	0.6	1.2	0.7	2.5
Six to ten years old						
Underweight	33.0	33.0	31.6	26.6	*	*
Stunting	33.9	38.9	33.1	28.7	*	*
Overweight for age	0.4	0.7	2.2	1.3	*	*

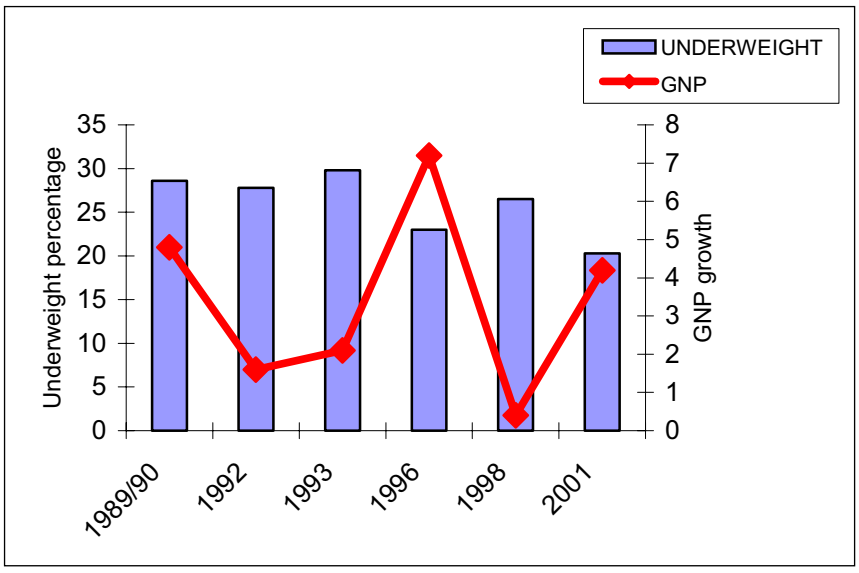
* National estimates only.
Source: FNRI-DOST, 2002.

FIGURE 3
Prevalence of wasting and GNP growth trends, 1989/90-2001
(children under five years of age)



Source: FNRI-DOST, 2002; Templo, 2003.

FIGURE 4
Prevalence of underweight and GNP growth trends, 1989/90-2001
(children under five years of age)



Source: FNRI-DOST, 2002; Templo, 2003.

With regard to overweight, the national prevalence among children up to five years old more than doubled during the 11-year period (i.e. from 0.4 to 1.0 percent). The same increased eightfold among school-age children (i.e. from 0.1 to 0.8 percent). Compared to estimates for Metro Manila, there were proportionately more overweight-for-age children up to five years old in the metropolis than in the Philippines as a whole during all the survey periods. The region of Central Luzon, which is the most accessible to Metro Manila, also reported statistics close to that of Metro Manila. Table 13 presents the

nutritional status of these children in Metro Manila and other highly urbanized cities in various regions of the country.

TABLE 13
Nutritional status of children up to five years old in highly urbanized cities, the Philippines, 1998

	Prevalence (percentage)			
	Underweight	**Stunting**	**Wasting**	**Overweight-for-age**
Metro Manila	26.5	25.7	6.2	0.7
Iloilo	34.9	28.2	15.0	0.0
Bacolod	38.7	30.8	13.0	0.2
Cebu	34.5	41.2	4.6	0.2
Mandawe	36.5	39.3	2.5	0.3
Toledo	34.8	44.5	3.3	0.9
Zamboanga	33.3	29.7	5.3	0.6
Cagayan de Oro	32.5	29.7	11.4	0.0
Davao	27.6	36.2	4.3	0.0
Iligan	21.8	39.3	2.7	0.0
Baguio	18.7	32.9	1.1	0.2

Source: FNRI-DOST, 2002.

The higher prevalence of underweight and stunting in nearly all the other highly urbanized cities, compared to Metro Manila, and the higher prevalence of acute malnutrition in Iloilo, Bacolod and Cagayan de Oro reflect the stress from the rapid urbanization that these cities have experienced in recent years.

There were also increasing problems in terms of underweight among adolescents, both males and females, and overweight among females, but not males. The increasing overweight problem was also noted among adults of 20 years of age and over. In addition, 8.0 percent of adult males, vis-à-vis 40 percent of adult females, have a high waist-hip ratio ($\geq$1.0 and $\geq$0.85, respectively).

Micronutrient malnutrition continues to be a significant public health problem in the country, although prevalence rates are lower in Metro Manila than the national average. Between 1993 and 1998, there were no major improvements with regard to the magnitude of the problem. As of 1998, vitamin A deficiency (VAD) prevalence stood at 38 percent among preschool children and 31 percent among pregnant women. Iron deficiency anaemia affected a third of the population, including $\geq$50 percent of infants and pregnant women, and a third of children aged six to 12 were iodine deficient (FNRI-DOST, 2002).

TABLE 14
Trends in the nutritional status of adolescents, adults and pregnant and lactating women, the Philippines and Metro Manila

Age group and nutritional status	Prevalence (percentage)			
	Philippines		Metro Manila	
	1993	1998	1993	1998
Adolescents (11-19 years old)				
Underweight, Male	21.6	23.0	*	*
Female	9.5	16.4	*	*
Male and female	15.8	19.8	*	*
Overweight, Male	2.6	1.2	*	*
Female	2.2	4.7	*	*
Male and female	2.4	2.9	*	*
Adults (20 years and over)				
Underweight, Male	11.5	11.1	*	*
Female	16.1	15.4	*	*
Male and female	16.6	13.2	*	*
Overweight, Male	14.4	17.0	*	*
Female	18.6	23.3	*	*
Male and female	16.6	20.2	*	*
Lactating women				
Underweight	10.9	13.4	11.9	19.5
Overweight	15.8	13.6	16.9	31.5
Pregnant women				
Nutritionally at risk	21.2	14.7	28.2	9.4

* National estimates only.
Source: National Nutrition Surveys, 1993 and 1998.

TRENDS IN HEALTH STATUS IN THE URBAN ENVIRONMENT

Infectious diseases

HIV/AIDS

From 1984, when the first AIDS case in the country was identified, until December 2001, 1 611 HIV Ab seropositive cases were recorded in the HIV/AIDS Registry; more males (61 percent) than females have been affected and 28 percent were OFWs. Various epidemiologists, however, estimate the actual number of HIV cases as between a low of 5 000 and a high of 13 000. Using the high estimate, this translates to a national prevalence of 0.02 percent of the total population.

Described as a "nascent epidemic", the number of HIV/AIDS cases has been increasing, albeit at a slow pace. Between 1984-92 and 1993-99, the annual confirmed cases ranged from fewer than 100 cases to more than 100 but less than 200 cases. Confirmed cases were reported from highly urban areas all over the Philippines. Higher prevalence rates (>1 percent) have been noted among registered female workers, homosexuals and drug addicts who use infected needles.

Tuberculosis

The Philippines continues to have one of the highest rates of tuberculosis in the world. It is common throughout all regions of the country, and all levels of society. According to the World Health Organization 1997 Annual Report, 22 million, or one out of four, Filipinos are infected with tuberculosis and 270 000 develop the disease each year. Each day 68 people die of tuberculosis (Reyes, 2003). Families living in slum areas are particularly susceptible to the disease as a result of crowded living conditions and poor hygiene practices.

Non-communicable diseases

While the leading causes of morbidity are communicable diseases (including diarrhoea, pneumonia, bronchitis, influenza, tuberculosis, malaria and chickenpox), deaths mainly result from non-communicable diseases and this trend has been increasing. The mortality rate from diseases of the heart and the vascular system (ranking first and second among the leading causes of mortality) were 73.2 and 56.2 per 100 000 population, respectively, in 1995. Cancer moved from fifth to fourth leading cause of death from 1975-90 to 1995, and deaths associated with diabetes mellitus have also been increasing.

The 1998 National Nutrition Survey revealed the data given in Table 15 on cholesterol, triglycerides, fasting blood glucose, hypertension, strokes and angina in adults aged 20 and over.

TABLE 15
Frequency distribution of total cholesterol, LDL-cholesterol, HDL-cholesterol, triglycerides and fasting blood glucose levels, and prevalence of hypertension, strokes and angina, the Philippines, 1998

	Result in mg (%)	**Prevalence** (%)
Total cholesterol	< 200	84
	200-239	12
	≥ 240	4
LDL-cholesterol	< 130	76
	130-159	16
	160-189	6
	≥ 190	2
HDL-cholesterol	< 35	65
	35-59	32
	≥ 60	3
Triglycerides	< 150	81
	150-199	10
	200-399	8
	≥ 400	1
Fasting blood glucose	< 110	94
	110-125	2
	≥ 126	4
Hypertension	-	27
Strokes	-	6
Angina	-	18

Source: Sy *et al*., 2003.

Particular health problems in slums

The increasing congestion in metropolitan areas has taken its toll on the quantity and quality of urban services and infrastructure, mass transportation and general health conditions among the population. For example, the existing sewers in Metro Manila service more than the capacity they were constructed to serve. The waste generation rate in the city is 0.5-0.6 kg per capita/day, or approximately 6 000 tonnes of refuse each day. The

government's waste collection agencies are able to collect and dispose of about 4 200 tonnes a day of this refuse, while the rest remains uncollected, dumped on street corners or vacant lots or thrown into storm drains and waterways.

Most of the urban poor live in high-risk areas such as along riverbanks and highly sensitive coastal areas, canals, railroad tracks, utility corridors and watersheds. These are the communities that are poorly serviced or not serviced at all.

PROGRAMMES THAT HAVE TRIED TO ADDRESS FOOD AND NUTRITION ISSUES

To improve the nutritional status of Filipinos, the country has drawn up a Philippine Plan of Action for Nutrition for 1999-2004, with the following targets.

1. Reduce the prevalence of protein energy malnutrition among preschool children and schoolchildren by 20 percent.
2. Reduce the prevalence of chronic energy deficiency among adults by 20 percent.
3. Reduce the prevalence of iron deficiency anaemia by 20 percent.
4. Reduce the prevalence of low to deficient serum retinol among children of six months to six years to values not higher than the 15 percent World Health Organization (WHO) cut-off for public health problems.
5. Reduce iodine deficiency indicated by the urinary iodine excretion level among school-age children to values not lower than the 100 μg/L WHO cut-off for public health problems.
6. Reduce the prevalence of overweight among preschool children, schoolchildren and adults by 20 percent.

National Nutrition Council Programmes

The National Nutrition Council has identified the following "impact programmes".

Home, school and community food production

The Philippines' Department of Agriculture implements the "Kabuhayan sa Gulayan" (livelihood through vegetable gardens) in Metro Manila and other cities to support urban agriculture and to address the issue of urban food security. Critical to the success of the programme is the identification and enactment of local ordinances to permit the use of public vacant lots for this purpose, as well as the provision of technical support, including cultivation technologies for urban areas.

Nutrition education

The programme includes the promotion of the nutritional guidelines for Filipinos through the school curricula, counselling activities and public campaigns.

Micronutrient supplementation

A policy of universal (i.e. for all children from one to five years old), twice-yearly dosing of vitamin A supplements has been adopted in the Philippines since 1993. High-dose (200 000 IU) vitamin A (VA) capsules are distributed to these children in health or micronutrient distribution centres on designated days.

Despite a high (80-90 percent) coverage in the VA supplementation programme, VA deficiency (serum retinol [SR]<20 mcg/dL) among children of one to five in the Philippines rose from 35 percent in 1993 to 38 percent in 1998. Analysis of the Philippines' 1998 National Nutrition Survey data, which had one-time SR measurements from 11 640 children of one to five, collected over an eight-month period, one month to

more than six months after VA distribution, revealed that the impact of VA capsules on SR may be limited to the groups with the highest deficiency and up to four months or less after dose administration. This implies the need to shift from a policy of universal dosing to a targeted, more frequent (i.e. three times yearly) VA dosing scheme (Pedro *et al*., 2003).

Meanwhile, iron supplementation, targeting pregnant and lactating women and children of six to 24 months old, as well as anaemic and underweight preschool and school-age children, adolescents and older persons, has also been beset with supply as well as compliance problems.

Food fortification

Two laws, Republic Act 8172 (an Act Promoting Salt Iodization Nationwide) and Republic Act 8976 (the Food Fortification Law), were enacted in 1995 and 1998, respectively, in support of food fortification. However, the salt iodization law, which requires that all salt for human consumption be iodized, has fallen short of target because of weaknesses in monitoring by concerned regulatory agencies. Efforts are now being made towards the strengthening of policies and infrastructures for the monitoring and regulation of salt in the market, as well as in preparation for the full implementation of the Food Fortification Law, which focuses on the staples – rice, sugar, cooking oil and flour.

In order to promote accessibility for both urban and rural poor households, fortified foods, particularly iodized salt and fortified staples (when these become available), are to be sold in "rolling stores" at government-subsidized prices.

Food assistance

The programme includes centre- or school-based regular supplementary feeding during calamities or civil disturbances, and feeding programmes such as school breakfasts and milk feeding, as well as price discount schemes for rice and other staples through the "rolling stores".

The major issue concerning this approach, as with other programmes, has always been sustainability.

Bibliography

Asian Development Bank (ADB). 2002. *Key indicators of developing Asia and Pacific countries 2002: population and human resource trends and challenges*. Pasig City, the Philippines (www.adb.org/statistics).
Bacos, F.F., Ramirez, M.A.R., Dorado, J.B., Velasco, R.E. & Barba, C.V.C. 2002. *The nutritional status of streetchildren in Manila – why some are nutritionally well-off or worst-off*. Terminal Report. Neys-Van Hogstraten Foundation. (unpublished paper)
Banaag, C.G. 1997. *Resiliency: stories found in Philippine streets*. Manila, AUSAID, National Project on Street Children, and the United Nations Children's Fund (UNICEF).
De Guzman, M.P.E., Agustin, C.P., Recto, M.R.C., Lana, R.D. & Diaz, J.H. 1987. Street foods in the Philippines. *JNDAP,* 1(4): 117-121.
Duante, C., Velandria, F., Orense, C. & Tangco, J. 2001. Correlates of hypertension and android obesity among Filipino adults. *Philippine J. Nutr.,* 48(1-2): 81-102.
Duque, F. 2003. *The national health insurance in the face of the demographic crisis*. A paper presented at the 25th Annual Meeting of the National Academy of Science and Technology, Manila. July.
Florentino, R.F. & Mondala, A.U. 1998. Streetfoods and junkfoods: facts, fads and fallacies. *Philippine J. Nutr.,* 45 (1-4): 19-30.
Florentino, R.F., Pedro, M.R.A. & Molano, W.L. 1996. The changing dietary intake and food consumption patterns in the Philippines. In *Changing dietary intake and food consumption in Asia and the Pacific*. Tokyo, Asian Productivity Organization.
Florentino, R.F., Villavieja, G.M. & Laña, R.D. 2002. Dietary and physical activity patterns of 8- to 10-year-old schoolchildren in Manila, Philippines. UNU Press. *Food and Nutr. Bull.,* 23(3): 267- 273.
FNRI-DOST (Food and Nutrition Research Institute, Department of Science and Technology). 2001. *The Philippine nutrition facts and figures*. Taguig, the Philippines.
FNRI-DOST (Food and Nutrition Research Institute, Department of Science and Technology). 2002. *The Philippine nutrition facts and figures*. Supplement 1. Taguig, the Philippines.
Lamberte, E.E. 2000. *Today's Metro Manila Streetchildren*. Manila, De La Salle University.
Molano, W., Yap, A., Barba, C. & Nueva-Espana, M. 2003. *An analysis of the nutritional status of rural households in the Philippines*. Philippines Food and Nutrition Research Institute. (unpublished paper)
National Statistics Office (NSO). 2000. *Census of Population and Housing*. Manila.
National Statistics Office (NSO). 2003. *2001 Survey on Children*. Presented during the Fourth National Health Research Forum, Manila, 6-7 August.
Ofreneo, R.P. 1997. *Globalization: from history to herstory*. Paper presented at the Roundtable Discussion on Globalization: from History to Herstory, sponsored by the National Centennial Commission – Women's Sector, University of the Philippines, 30 September.
Pedro, M.R.A., Cheong, R.L., Madriaga, J.R. & Barba, C.V.C. 2003. The Philippines' Vitamin A Supplementation Programme: Indicative Impact, Policy and Programme Implications. Paper presented at the satellite meeting on Programmes in Public Nutrition – Successful Micronutrient Programmes, 17th International Congress of Nutrition, Vienna, 23-25 August 2001 and XXI International Vitamin A Consultative Group, Morocco, 3-5 February 2003.
Philippine Institute of Development Studies (PIDS). 2003. National Statistical Coordination Board (dirp.pids.gov.ph).
Population Commission. 2002. *APPC Country Report,* p. 27-32 (www.popcom.gov.ph).
Reyes, C.M. 2003. *Country development programming framework for the Philippines: assessment of the social sector*. (unpublished paper)
Sy, R.G., Dans, A.L., Eduardo, F.B., Amarillo, M.L. & Velandria, F.V. 2003. The prevalence of dyslipidemia, diabetes, hypertension, strokes and angina pectoris in the Philippines. *Philippine J. Internal Medicine,* 41: 1-6.
Templo, O.M. 2003. *Country development programming framework for the Philippines: Philippine development context and challenges*. (unpublished paper)
Tiglau, T., Baltazar, J. & Baquilod, M. 2001**.** *Baseline Behavioural Risk Factor Survey.* Paper presented during the National Statistics Month. National Institute of Health 2001 Forum, the Philippines.
UNICEF. 1988. *The situation of streetchildren in ten cities*. Manila. United Nations Children's Fund.

Impact of globalization on food consumption, health and nutrition in urban areas: a case study of Brazil

Ana Lydia Sawaya, Paula Andrea Martins and Vinicíus Jose Baccin Martins[1]

URBANIZATION, DEMOGRAPHIC CHANGE AND HEALTH

Brazil's population in 2001 was estimated at 172 million, 80 percent of whom live in urban areas (United Nations Population Division [UNPD], 2001). Population growth in Brazil has slowed down significantly. In the last decades, population concentration has increased in the southeast, the country's most developed region in economic activity and creation of jobs. São Paulo is the largest city with approximately 17.9 million inhabitants, followed by Rio de Janeiro with over 10 million (UNPD, 2001). There are an additional 18 cities in Brazil with populations exceeding 750 000 (UNPD, 2001). The proportional population distribution by region practically did not change in the period analysed. More than half the population lives in the south and southeast (57.4 percent in 2000). Just under one-third lives in the northeast (28.1 percent in 2000). The north and centre-west – regions in which the economic frontiers are expanding – had a slight population increase (from 13.2 percent in 1991, to 14.5 percent in 2000) (OPAS, 2002). Urban concentration is more pronounced in the southeast, south and centre-west regions. The north and northeast, which are less developed, present the lowest urban concentrations (OPAS, 2002).

TABLE 1
Urbanization rate (percentage) in Brazil and major regions, 1991, 1996 and 2000

Regions	1991	1996	2000
Brazil	**75.6**	**78.4**	**81.3**
North	59.0	62.4	69.9
Northeast	60.7	65.2	69.1
Southeast	88.0	89.3	91.0
South	74.1	77.2	80.9
Centre-west	**81.3**	**84.4**	**86.7**

Source: IBGE demographic census (1991 and 2000) and population count (1996) (OPAS, 2002).

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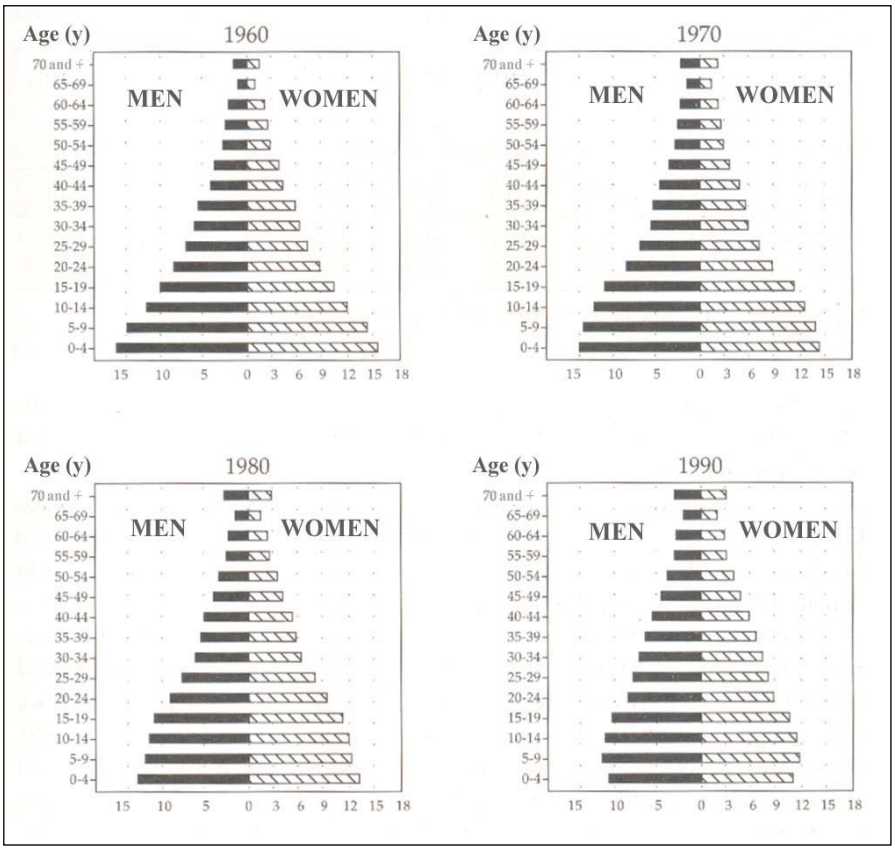
Shifts in demographic structure

The population distribution by age groups shows that 44.5 percent of the people were under 20 years of age in 1960 (Figure 1). There has been a marked increase in the population over 60 years of age: in 1970, older people represented 5 percent of the entire Brazilian population, and in the year 2000 they represented 12 percent. These changes are a result of a variety of factors, which are discussed below. They include declining fertility and infant mortality rates and a shifting proportion of mortality from younger to older age categories.

FIGURE 1
Population occupying the Brazilian territory, 1960 to 1990



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Total fertility rate decreasing

The total fertility rate is represented by the average number of live births that women have had by the end of their reproductive period. This rate has been progressively falling in Brazil (in 1991 it was 2.73; in 1996, 2.40; in 1999, 2.30). Rates below 2.1 are suggestive of fertility that is insufficient to ensure population replacement. The decreasing rate is associated with several factors such as growing urbanization; reduction of the infant mortality rate; improvement in educational levels; wider use of contraceptives; greater participation of women in the workforce; and job instability (OPAS, 2002). The only age group that has shown an increase in specific fertility rate is the adolescent group (15 to 19 years of age), especially in the northern region (OPAS, 2002).

Life expectancy increasing

Life expectancy at birth has been rising across all regions for both sexes and is currently 68.3 years – 64.5 for males and 72.3 for females (IBGE population projections for Brazil and its major regions, 1991-2020) (OPAS, 2002). The southern regions have the highest life expectancy, while the northeast has the lowest, but the latter region presents the highest average in number of years gained since the beginning of the period analysed.

Ageing structure of mortality

Brazil's infant mortality rate (IMR) is 49.7/1 000 live births, down from 69 in 1980-1990. The northeast region has the highest IMR (88) while the south has the lowest (26.7) (OPAS, 2002). There has been a consistent downward trend in IMRs across all regions of Brazil, reflecting improvements in living conditions, declining fertility and the effects of public interventions in the areas of health, sanitation and education, among other aspects.

The proportional death rate by age has decreased among the young and increased for the population over 60 years of age.

TABLE 2
Proportional death rate (percentage) per age group (in years),[1] 1990 and 1998

		Age group					
		<1	**1-4**	**5-9**	**10-19**	**20-59**	**60 +**
Brazil	1990	11.9	2.2	0.9	2.9	32.4	49.7
	1998	7.8	1.4	0.6	2.8	33.2	54.2

[1] Starting at ten years of age.
Source: OPAS, 2002.

Social inequality

There has been an increase in social inequality in the nation since 1960, with the northeast defined as the poorest region, and the south and part of the southeast as the wealthiest regions (Campos *et al.*, 2003).

Figure 2 shows these social inequality indexes – the higher the index, the better the social situation.

FIGURE 2
The evolution of the Social Inequality Index, 1960, 1980 and 2000

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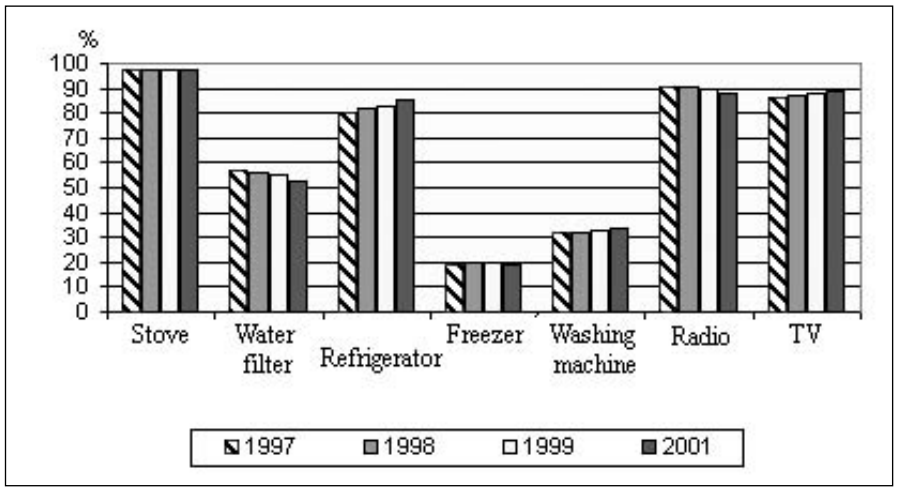
GROWTH IN GOODS, SERVICES AND COMMUNICATIONS

Increased access to consumer goods, water and sanitation facilities and communications can be used as a gauge to monitor changes in society.

In recent years there has been a very discrete increase in the consumer goods found in homes (Figure 3). Nearly all homes have a stove and most have radio and television. Ownership of a refrigerator has increased the most, although only 20 percent of homes have a freezer.

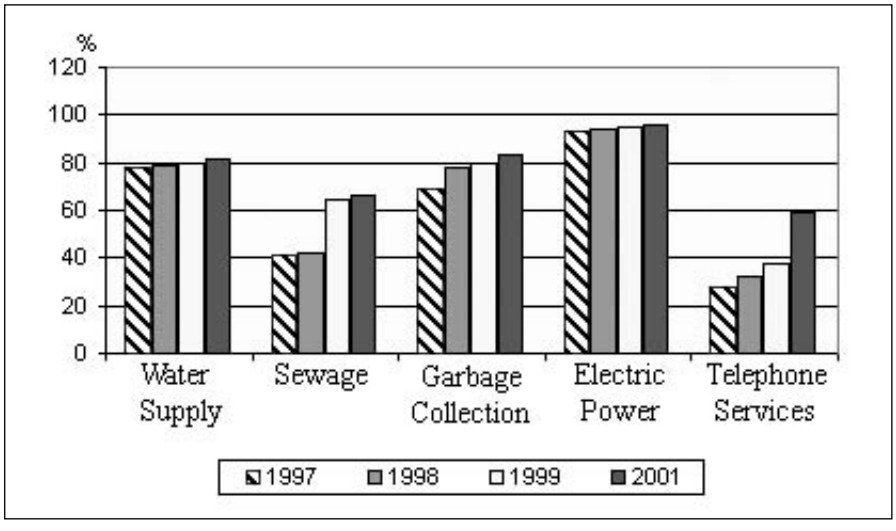
FIGURE 3
Homes with consumer goods, 1997-2001



Source: IBGE, 2001.

Figure 4 illustrates the evolution over the past five years in access to basic utilities. Access to electricity and a clean water supply is above 80 percent. Access to sewage and telephones has increased the most. However, access to services is not evenly distributed throughout the country. For example, in 1999 in the northern, northeastern and centre-west regions, only 50 percent of the inhabitants had the advantage of sewage services (OPAS, 2002).

FIGURE 4
Access to utilities, 1997-2001



Source: IBGE, 2001.

Communications

Telephone

There has been a large increase in the number of homes with telephones. Land-line telephones were implemented in the country with internal services mainly provided by international corporations. The presence of national companies has traditionally been minor, gaining some relevance only after Telebrás established programmes to develop successful products. The sector's trade balance reflects the recent massive post-privatization investments, mainly in mobile phone businesses, where the telephone components are mostly imported (BNDES, 1999a).

Internet

The Internet in Brazil experienced an 84 percent growth leap between January 1998 and January 1999, as compared to the 46 percent worldwide rate. In addition, the Web in Brazil accounts for 50 percent of all Latin American traffic (BNDES, 1999b). Brazilian Internet traffic has increased significantly. An interesting indicator of this growth is the fact that, in late 1996, 90 percent of the traffic originating in the country went to internationally based sites, whereas that percentage has currently decreased to 60 percent, indicating greater interest in Brazilian sites, which consequently means more hits. The highest concentrations of traffic are in Rio de Janeiro and São Paulo. It is estimated that 60 percent of the national traffic total is from São Paulo, and 30 percent from Rio. The increased use of the Internet is explained by the greater availability of telephone lines and the overall reduction in Internet service provider subscriber fees, but it is also related to people's desire to be integrated with the Web (BNDES, 1999b).

Brazilian Internet users access the Web daily or almost daily. The majority of users reported accessing it either from home or work. Cyber cafés and other public Internet access points are not as commonly used (BNDES, 1999b).

Transportation

Road transport is the main transportation means in Brazil. Trucks carry 56 percent of all cargo within the country, while rail and fluvial transport account for 21 and 18 percent of the total, respectively. This predominance of road transport is explained by existing legislation, which hinders waterway transportation, by the lack of investments in rail and river links, and by the shortcomings of the public administration (Ministério dos Transportes, 2003). Both the national economy and the transportation systems before the mid-1950s were quite incipient. The gross domestic product (GDP) barely reached US$30 billion, and exports were practically limited to coffee. From that period on, there was accelerated development. The national motor industry was launched, the roster of export items was diversified, with the predominance of manufactured goods, and since then the GDP has increased 30-fold, which has also stimulated the expansion of the transportation grid. The national road network today covers 1 355 000 km, of which 140 000 km are paved (Ministério dos Transportes, 2003). The number of motor vehicles in the country has increased rapidly over the last decades (from 3 145 in 1991 to 19 310 in 2000), ahead of countries such as Mexico and China (ANFAVEA, 2003).

Air transport

Air travel in Brazil has paralleled the country's growth. Industrialization and progress, which caused a large number of the Brazilian population to migrate to the cities, and the need for interchange with other nations, made aeroplanes a necessity (Ministério dos Transportes, 2003). Each year new groups of passengers come on board, with the sector

growing at an 8 percent annual rate in recent years, at twice the pace of the world average. The number of flying passengers per year went from 43 million in 1994 to more than 80 million in 2002. Tourism is expected to drive intense growth in air travel in the next few years (Ministério dos Transportes, 2003). Expensive fares, hard-to-reach airports, as well as the low incomes of most of the population are still some problems that make air travel in Brazil a means of transportation just for the elite (Ministério dos Transportes, 2003).

Other indicators of cultural and social change

A significant distortion in the distribution of cultural and entertainment assets and facilities can be seen. According to the Institute of Applied Economic Research, 73.2 percent of Brazilian municipalities do not even have a museum, and just 7.2 percent of towns have cinemas. With regard to public libraries and book stores, the situation is not very different, since only 10.9 percent have two or more libraries, and no more than 35.4 percent have book stores, facts which point to the geographic aspects of the existing cultural and economic inequalities (IBAM, 2001).

The banking sector has been modernizing rapidly. Banks have invested heavily in automating their activities, specifically in what is known as the frontline of banking (teller operations and ATMs). It is estimated that, between 1995 and 1998, the investments of Brazilian financial institutions in automation reached US$6.5 billion. In 1992 there were 4 900 ATMs in Brazil, a figure that in 2003 already exceeded 24 000 (BNDES, 2000a).

CHANGES IN DIETARY PATTERNS

The evolution of availability of nutrients (energy and types of foodstuffs) in urban areas

Metropolitan surveys of family budgets carried out in the 1960s, 1970s and 1980s collected information that permits the characterization of the evolution of the Brazilian diet. Over 30 years, important changes were detected, with obvious effects on the nutritional profile of the population. The observed changes include an increase in the consumption of products from animal sources, especially milk and dairy products, but also meat and eggs; a decline in the consumption of cereals, beans, roots and tubers; and a massive substitution of animal fats (lard, bacon and butter) by vegetable oils and margarine. Overall, the effects of these changes on the population's health were positive, improving the dietary protein, micronutrient and lipid composition of the diet (with an increase in the polyunsaturated and saturated fatty acids ratio and reduction of the cholesterol content). The negative aspect of these changes was an increase in the total lipid content of the diet observed in the southeast which, by 1988, had reached close to 30 percent, the highest recommended level (Oliveira, Cunha and Marchini, 1996).

For the period of 1974/75 to 1987/88, data regarding the food intake of the populations of the metropolitan areas show that there was a decrease in quantities and in the percentage of adequacy of calories. The decline in energy consumption ranged from 6 percent in the northeast to 26 percent in Brasilia (Sichieri *et al.*, 1997).

Direct information and measurements of food consumption for the period from 1990 to 1995 are rare and scattered. It is believed that the decrease in inflation and the rise in income among the lower socio-economic levels could have resulted in greater food consumption. The increase in agricultural output in the years 1993/94 and 1994/95 would speak in favour of a greater availability, but not necessarily of a greater consumption of food. Despite the overall increase, the production of rice and beans – the basis of the diet of a great majority of Brazilians – did not go up. With the increase in the population, albeit at a slower pace, it would seem that the poor are consuming fewer of these staples (Oliveira, Cunha and Marchini, 1996).

The National Metropolitan Surveys on Family Budgets were carried out between March 1987 and February 1988 (POF-1988) and again between October 1995 and September 1996 (POF-1996). The POF-1988 surveyed 13 611 homes and the POF-1996 assessed 16 014, covering 11 metropolitan areas. Both surveys arrived at a value for daily per capita domestic food availability, dividing the total quantity of food bought in the month by the number of residents and by the number of days in the month (Monteiro, Mondini and Costa, 2000).

The relative contribution of different food groups to dietary energy was calculated for two agglomerated metropolitan groups: the north-northeast and the more developed regions in the southeast, south and centre-west, referred to in Table 3 as centre-south. According to the POF-1996, families with incomes below two minimum monthly salaries represented 18.6 percent of the total number of families in the metropolitan areas of the northern and northeastern regions combined and only 5.8 percent of the total of metropolitan families living in the centre-south. On the other hand, family incomes above 30 minimum monthly salaries were found in 6.6 percent of the metropolitan families living in the north and northeast, and in 12.8 percent of the metropolitan families of the centre-south (Monteiro, Mondini and Costa, 2000).

The values of the daily per capita availability of energy declined from 1 919 kcals in 1988 to 1 711 kcals in 1996. The values for the northern and northeastern metropolitan areas were 1 704 kcals and 1 706 kcals, and 1 965 kcals and 1 712 kcals for the metropolitan areas of the centre-south (Monteiro, Mondini and Costa, 2000). For both regions, the most dramatic change was an increased percentage of dietary energy from meat and sausages. In the latter metropolitan areas, between 1988 and 1996, the proportion of expenses on meals away from home grew from 24.4 to 26.1 percent, while it declined from 25.6 percent to 21.7 percent in the metropolitan areas of the north and northeast (Monteiro, Mondini and Costa, 2000).

TABLE 3
Percentage of dietary energy supplied by different food groups in metropolitan areas of Brazil in 1988 and 1996

	North-northeast		Centre-south		Brazil	
Food groups	**1988**	**1996**	**1988**	**1996**	**1988**	**1996**
Cereals	30.6	32.9	35.0	35.3	34.4	34.8
Beans	7.4	7.3	5.6	5.3	5.8	5.7
Vegetables	0.5	0.5	0.6	0.5	0.6	0.5
Roots and tubers	12.1	8.9	3.2	2.7	4.6	4.0
Meat and sausages	12.5	14.1	10.5	13.0	10.8	13.2
Milk and dairy products	5.7	6.0	8.4	8.9	8.0	8.2
Sugar and soft drinks	13.5	13.9	13.2	13.5	13.2	13.7
Vegetable oils and fats	10.0	10.0	15.2	12.9	14.4	12.4
Fruit and fruit juices	3.3	2.4	3.2	3.2	3.2	3.0
Nuts	0.3	0.2	0.1	0.1	0.2	0.1
Eggs	1.5	1.3	1.5	1.0	1.5	1.0
Lard, bacon and butter	0.7	0.6	0.9	0.7	0.9	0.7
Alcohol	0.4	0.5	0.5	0.6	0.5	0.6
Seasoning and spices	0.2	0.3	0.4	0.4	0.4	0.4
Other preparations	1.2	1.0	1.7	1.8	1.6	1.6
TOTAL	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Monteiro, Mondini and Costa, 2000.

The importance of meals away from home and the growth of fast food chains

The fast-paced life in the large Brazilian cities has made the food service sector very promising, maintained by loyal clients, who by necessity have meals in restaurants every day. Currently, one out of every four meals is eaten away from home. This includes meals in bars, restaurants and bakeries; by delivery; in hospitals, aeroplanes, trains and fast food chains. It represents a market of R$3.5 billion. The figure is still low, when compared to European patterns, in which 70 percent of meals are eaten away from home. It does, however, represent a significant change, if compared to the beginning of the 1990s and it is already moving towards the North American pattern, in which the ratio is of one meal away from home for each two in the household. The food industry is growing at a pace of nearly 13 percent per year, representing 20 percent of the revenues of the food sector in the country. Products such as industrialized mayonnaise, ready-made dressings and canned oils, for restaurants and coffee bars, have been growing at 10 percent per year. Growth in this area has also been accelerated by the successive economic crises of the past years because, for fear of losing their jobs, employees put in longer hours at work, a pattern conducive to more meals away from home.

Fast food chains now have greater revenues than bars and a little under those of Brazilian bakeries. According to estimates, the fast food sector has revenues of R$2.7 billion per year in the country. McDonald's, the largest fast food chain in the country, opened in Brazil in 1979 and today owns 570 restaurants, 640 kiosks and 17 coffee stands. The total number of McDonald's restaurants grew 379 percent between 1993 and 2002. The most significant evolution occurred among the franchised outlets. From 1998 to 2002, the number of workers leapt from 22 000 to 36 000 (Jornal da Tarde, 2002).

The food retail sector in Brazil

A dramatic increase of 19.6 percent in the number of supermarkets and hypermarkets was observed between 1998 and 1999. During the same period, the number of traditional retail shops (mainly “mom-and-pop” produce and grocery stores) grew by only 1.8 percent. The poor performance of the traditional outlets has been associated with their conversion to self-service shops (BNDES, 2000b). The food retail sector in Brazil is undergoing an accelerated process of consolidation. The five largest chains went from a 23 percent share of gross revenues in 1994 to 40 percent by October 1999 (BNDES, 2000b).

THE IMPACT OF GLOBALIZATION ON LIFESTYLES

Types of occupation and sedentary work: more than half of all jobs are now in the service sector

Labour force distribution by economic sector has changed radically over time. Brazil has kept abreast of global changes in employment migration, first from agriculture to industrial activities, and then on to services. Service job openings have been considerably higher than new positions in the manufacturing industry since the 1960s, and have gone ahead of employment in agriculture since the 1980s. Today the service sector employs more people (33 million) than agriculture (11 million) and industry (10 million) combined (IPEA, 2002).

Types of leisure activities (television hours per day)

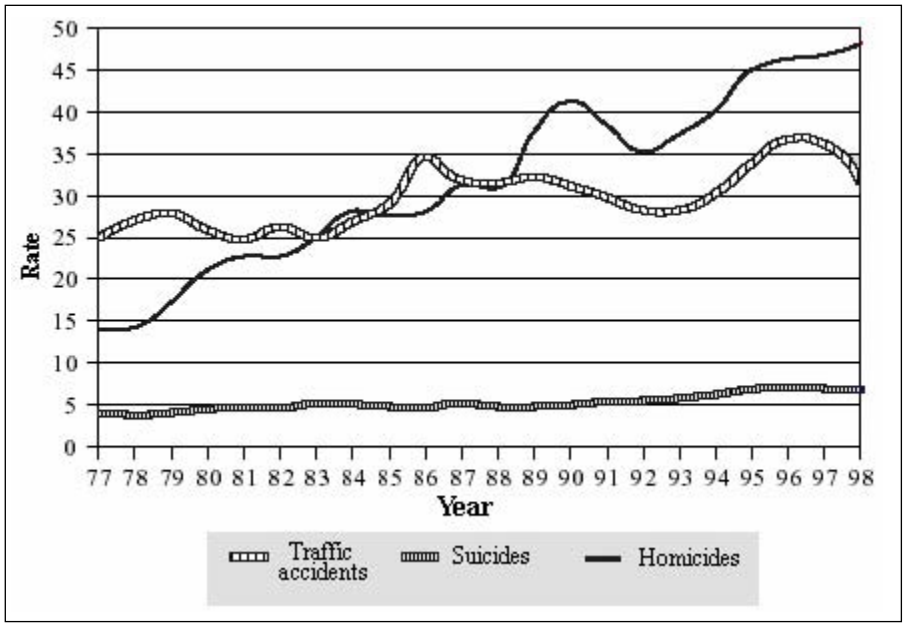
Data from the last National Home Sampling Survey, carried out in 2001, show that television ownership has permeated all layers of society, from the upper and middle classes to less privileged areas. In the poorest urban areas such as Natal, in the state of Maranhão, the number of television sets was close to 86 percent. Television is today the main source of entertainment, even for lower-income families, who spend five to eight hours a day in

front of the television. It is watched mostly for entertainment. News and information come second (A Tribuna do Norte, 2002).

Crime

In the steps of the process of globalization of values and loss of cultural and religious traditions, there has been an increase in the mortality rate due to external causes in Brazil, a fact that is generally associated with the growth of social differences. Accidental deaths, mainly traffic fatalities, predominated mortality rates by the end of the 1970s. In the 1980s, however, those causes were overtaken by deaths caused by homicides (Figure 5). It is noted that the mortality rates from this specific cause increased considerably between 1979 and 1998. This increase becomes even more marked when the figures for males are analysed separately (IPEA, 2000).

FIGURE 5
Male mortality rates (per 100 000 inhabitants) resulting from external causes, Brazil, 1977/98



Source: de Mello Jorge, 2000.

Tobacco

Between 1970 and 1980, cigarette smoking increased by 132 percent. There were 25 million smokers in the second half of the 1970s but, by 1987, Brazilian capitals had close to 33 million smokers, which means a 32 percent increase in ten years. Approximately 32.6 percent of the adult population smokes regularly, with the habit distributed among 11.2 million women and 16.7 million men. Most smokers acquire the habit between the ages of 15 and 19, and the majority of smokers are found among people who are 20 to 49 years old. The percentage of smokers among females is higher than among males in the younger age groups, which suggests that the former are starting earlier and smoke more intensely. The proportion of smokers across all age groups is higher in rural areas than in urban centres. It is estimated that there are nearly 200 000 deaths per year in Brazil as a result of smoking.

Alcohol

Alcoholic beverages are easily available throughout Brazil, making alcoholism fairly prevalent. Pinga or cachaça, the most popular type of low-cost hard liquor in Brazil, is distilled from fermented sugarcane. It contains a high percentage of alcohol (around 40 percent) and this makes it a significant source of calories for a large part of the population (Oliveira, Cunha and Marchini, 1996).

It was estimated in 1980 that 41 million Brazilians regularly consumed alcoholic beverages, four million of whom drank often or a lot. In São Paulo, the prevalence of alcoholism represented 12 percent of the general population. In Rio de Janeiro, the prevalence of alcohol intake included 51 percent of the population, and 3 percent were regarded as alcoholics. There was a 22.6 percent prevalence of alcoholism among the low-income urban population of Salvador, Bahia. Studies show that poverty, unemployment and alcoholism are linked (Oliveira, Cunha and Marchini, 1996).

Epidemiological studies on alcoholism have shown that the male/female ratio ranges from 8:1 to 14:1. The prevalence of alcoholism is higher among individuals aged between 30 and 49, although there is evidence that addiction already sets in at 20 years of age (Oliveira, Cunha and Marchini, 1996).

Advertising

In Brazil, many adolescents spend five hours a day in front of the television. A 2002 study (Almeida, Nascimento and Quaioti, 2002) has revealed that foodstuffs accounted for 27.5 percent of all advertising, with twice as many food commercials at night as during other periods. The frequency and number of advertisements for alcoholic beverages increased significantly on Saturday afternoons and evenings. Out of 1 395 food commercials, 57.8 percent were within the food pyramid represented by fats, oils, sugars and sweets. The second food pyramid group most often seen in advertisements was that represented by breads, cereals, rice and pasta (21.2 percent), followed by the group of milk, cheese and yoghurt products (11.7 percent) and by the group of meat, eggs and beans (9.3 percent). Fruit and vegetables were not advertised at all. The food pyramid that was built, based on the frequency of food advertisements on television, differed significantly from what is considered ideal. There was a complete inversion, with almost 60 percent of the advertisements representing the group of fats, oils and sweets. There was a significant increase in expenditure from 1999 to 2000 by the largest advertisers. For example, Coca-Cola increased its advertising budget from US$43 435 to $51 088; Nestlè from US$42 231 to $45 804; and McDonald's from US$19 485 to $23 500 (Grupo de Mídia de São Paulo, 2003).

Changes in jobs occupied by women

Employment for females in Brazil has grown more rapidly than for males. It is estimated that women occupied 70 percent of the 1 158 000 new job positions created in São Paulo between 1989 and 2001. The level of female employment rose 32.9 percent, whereas the increase for men did not exceed 8.7 percent during that period. The participation of women among employed workers went from 38.4 to 43.2 percent. Above all, the restructuring of the job market has lead to a reduction in formal sector jobs and growth in self-employment. There has been an overall reduction in the number of registered salaried employees in the private sector, with opposing trends between the sexes: 358 000 men were fired and 43 000 women were hired, resulting in an overall reduction in the salaried employment rate, which fell from 72.1 to 63 percent (SEADE, 2002). Entrepreneurial activity rose 102.9 percent among women and 21.1 percent among men. Despite the difference in percentages, the absolute numbers were similar. Table 4 shows the growth in female employment in several professional sectors. However, despite this increase, there was a reduction of 19.5 percent

in average income among women, a lesser decrease, therefore, than the 31.5 percent fall observed among average wages received by males. Yet, in terms of monetary values, the difference in income levels between women (R$677) and men (R$1 058) persisted in 2001, but the gap diminished (SEADE, 2002).

TABLE 4
Typically female jobs account for the largest portion of the rise in employment in São Paulo

Large occupation groups	1989	2000	Variation (percentage)
TOTAL	**2 693 632**	**3 054 635**	**13.4**
Cleaning service workers and others	423 370	602 867	42.4
Back office and administrative workers	799 562	946 630	18.4
Teachers, communication professionals and lawyers	369 591	503 731	36.3
Retail and wholesale workers	191 204	323 763	69.3
Directors and managers	21 805	59 079	170.9
Technical and scientific occupations	116 346	152 162	30.8
Agriculture and farm workers	45 000	43 813	-2.6
Industry workers	587 337	414 142	-29.5
Unknown or ill-defined occupations	139 417	8 448	-93.9

Source: Ministry of Labour and Employment – MTE/Annual Social Information Report – Rais (SAEDE, 2002).

Prevalence of breastfeeding

There has been a systematic increase in what is known as *full breastfeeding*, which includes: (i) exclusive breastfeeding; (ii) breastfeeding, in addition to the infant receiving water, tea and juice; and (iii) breastfeeding complemented by the intake of solids, semi-solids and liquids, including formula milk (OPAS, 2002). In 2000, only about half of Brazilian children were still being exclusively breastfed at 30 days of life. At four months, the proportion of children who were exclusively breastfed corresponded to 18 percent of the total, with that percentage falling to 8 percent at the end of the sixth month (OPAS, 2002).

NUTRITIONAL STATUS

Nutrition in children

In spite of the decrease in infant mortality and the improved nutritional conditions of children in general, malnutrition – particularly undernutrition – remains a serious concern in the poorest regions of the country and in pockets of poverty in large cities. There are regions with social and nutritional indicators that are equivalent to those in Africa, coexisting with regions where the situation is similar to that of the United States.

Three national studies, ENDEF (IBGE, 1974), PNSN (INAN, 1989) and PNDS (BENFAM, 1996), assessed the nutritional status of children under five years of age in Brazil, according to the criteria of weight-for-age, height-for-age, and weight-for-height.

Stunting is the main type of malnutrition in Brazil, although the prevalence of both stunting and underweight has dropped. Regional differences, however, increased, as the prevalence of malnutrition experienced its greatest drop in the richest regions of the country. Wasting has low prevalence in Brazil. The prevalence of malnutrition is greater in the rural population and the regions most affected are the north and northeast.

TABLE 5
Trends in undernutrition in children under five

	Stunting			Underweight			Wasting		
	1974-75	1989	1996	1974-75	1989	1996	1974-75	1989	1996
Brazil	**32.0**	**15.4**	**10.5**	**18.4**	**7.0**	**5.7**	**5.0**	**2.0**	**2.3**
North urban	38.9	23.0	16.2	24.5	10.7	7.7	6.4	3.1	1.2
Northeast	45.6	27.3	17.9	27.0	12.4	8.3	5.5	2.4	2.8
Southeast	22.0	8.1	-	13.4	4.2	-	5.2	1.9	-
South	25.1	8.7	5.1	11.7	2.3	2.0	3.6	1.4	0.9
Centre- west	25.5	8.2	8.2	13.3	4.0	3.0	3.9	2.0	2.9

Note: below two standard deviations (NCHS).
Source: WHO, 1997.

A reduction in the prevalence of malnutrition in Brazilian children is more related to improvements in the urban infrastructure than to the reduction of poverty in itself. Conditions that afforded gains in the reduction of malnutrition, particularly in the cities, are related to good practices in care, and access to basic health services, including family planning and water treatment and sanitation services. The reduction is also likely to be a result of the decrease in energy expenditure, as a consequence of the reduction in physical activity and of the lesser severity of infections, despite the increase in poverty and the probable reduction in food consumption. These data show that malnutrition was reduced by focused measures, such as better health care, and did not depend exclusively on the increase in income.

Nutritional status of adults

While undernutrition has also decreased among adults, obesity has increased, especially in the lower-income population of the richest region (southeast).

TABLE 6
Secular trend of the prevalence (percentage) of obesity in two regions of Brazil, according to per capita income quartiles

	Men			Women		
Region/income quartiles	**1975**	**1989**	**1997**	**1975**	**1989**	**1997**
Northeast						
1st quartile	0.7	0.8	1.7	3.0	5.2	8.0
2nd quartile	0.9	1.4	3.8	3.2	8.3	14.1
3rd quartile	1.1	3.0	4.1	4.5	7.8	13.3
4th quartile	2.8	5.2	8.4	7.6	9.9	14.6
Southeast						
1st quartile	1.6	2.9	3.8	6.6	11.6	15.0
2nd quartile	2.2	4.2	9.7	8.0	16.5	12.1
3rd quartile	3.3	7.8	9.6	10.3	14.8	13.2
4th quartile	5.3	8.1	9.5	9.1	13.2	8.2

Source: Monteiro, Conde and Popkin, 1999.

The socio-economic situation and nutritional status of families living in shantytowns

Brazil has the third highest rank for social inequality in the world and, as such, data that consider just the national average prevalence might mask the identification of the impact of globalization and of the existing differences between rich and poor. In view of this, the authors carried out several studies in populations living in shantytowns of the southeast (São Paulo) and northeast (Maceió). In São Paulo, the richest city in the country, the population of the shantytowns reaches 20 percent, or close to 2 million people (SEHAB, 1994), but it represents 50 percent of the total inhabitants of Maceió, capital of the second poorest state of the country.

Anthropometric and socio-economic censuses were carried out in 22 shantytowns of São Paulo in 1990-1991. Most adults were migrants (88 percent), of whom 70 percent had come from the northeast of the country. Many of the children were also migrants (26.5 percent), and 79 percent of them had also come from the northeast. Ninety percent of the population earned less than US$1/day. Data on illiteracy and level of schooling showed that 20 percent of the men and 23 percent of the women were illiterate and 11 percent of the men and 15 percent of the women had never gone to school. Illiteracy was also present in a high percentage of children older than ten (12 percent) (Sawaya *et al.*, 2003).

Most of the housing units were shacks made out of wood (74 percent) and had inadequate sanitary conditions (20 percent). An interesting observation was that the families, as far back as the beginning of the 1990s, were not very large (four to five persons). Despite the fact that living and income conditions were so precarious (average per capita income was US$0.54/day) and also despite the high prevalence of malnutrition – 44 percent of the families studied had at least one undernourished member – 15 percent of the families had at least one obese member (Sawaya *et al.*, 2003).

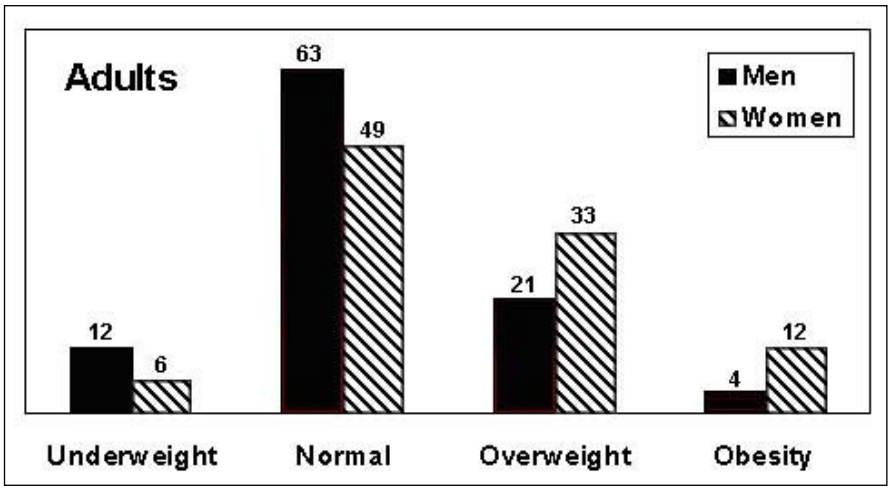
Multiple logistic regression analyses were carried out to identify the factors most associated with the presence of chronic malnutrition (short stature) in the family. In the complete model, the most important variable was the absence of floor tiles in at least one of the rooms of the dwelling, while living in wood shacks showed marginal statistical significance. After the elimination of the least significant variables, the most important factors for explaining the presence of malnutrition in the household were lack of tiled floors (b=0.739, OR=2.1, p=0.027) and absence of water taps (b=0.489, OR=1.6, p=0.042), both factors known to be strongly associated with parasitic infections and diarrhoea. The chance for a child or adolescent (up to 18 years) of suffering from short stature was twice higher when there was no floor covering in all rooms and increased by 60 percent when there was no treated water supplied to the household (Sawaya *et al.*, 2003).

Coexistence of malnutrition and obesity

The evaluation of the nutritional status of children, adolescents and adults showed the presence of both undernutrition and obesity**.** The study identified adolescent girls with short stature and obesity, with a prevalence of this group being almost twice higher than that of the group of obese girls with normal stature. Another finding that stood out was the simultaneous presence of malnutrition and obesity within the same family (13 percent of the families had at least one undernourished member and another obese) (Sawaya, 1997). These findings alone show the importance of classifying the nutritional status for programmes to prevent and treat malnutrition, and also that income is not a precise variable for poor populations living in urban areas.

Among adults, the prevalence of overweight and obesity was greater than that of undernourished individuals (Figure 6).

FIGURE 6
Nutritional status of adults living in 22 shantytowns in São Paulo



Note: underweight: BMI ≤ 20; normal: BMI >20 and < 25; overweight: BMI ≥ 25 and < 30; obesity: BMI ≥ 30.

The presence of some obese individuals and others malnourished in the same family, as well as that of adolescent girls with short stature (a consequence of undernutrition in childhood) and obesity, are facts that seem incompatible. If there is a high prevalence of undernutrition, there is clearly food insufficiency as a result of poverty and low incomes. How could there be obesity? The only plausible explanation could be changes in mechanisms by the human body to control energy expenditure. Studies performed by our group have shown reduced metabolic rates at rest in children with short stature (Grillo *et al*., 2000), reduced fat oxidation (Hoffman *et al*., 2000), higher susceptibility of weight/height gain when provided with diets richer in fat (Sawaya *et al.,* 1998), and increased blood pressure rates (Fernandes *et al*., 2003), among other factors.

Undernutrition, obesity and food consumption

In addition to the studies undertaken in the shantytowns of São Paulo, our group also investigated an extremely poor population living in a shantytown in Maceió in 1999 (Florêncio *et al*., 2001). Table 7 describes socio-economic and nutritional conditions even worse that those found in São Paulo. Almost the entire population lived in shacks made of plastic sheets, without any basic sanitation or supply of treated water. Most of the inhabitants were illiterate and unemployed, earning their living from odd jobs. The entire population was below the poverty line.

TABLE 7
Socio-economic conditions in the shantytown population of Maceió, Alagoas, 1999

Population	
Number of families	315
Number of people	1 247
Average number per shack	4
Income	
Monthly family income (US$)	40.32[1]
Per capita income (US$/day)	0.32[1]
Schooling (≥ seven years of age)	
Read	37.3%
Write	36.7%
Illiterate	63.3%
Occupation	
Unemployed	81.6%
Regularly employed	3.6%
Housing conditions	
Shacks made of plastic sheets	81.0%
Without floor covering	91.0%
Without refrigerator	80.6%
One-room dwellings	89.0%
Sanitary conditions	
Dwellings without water supply	97.0%
Dwellings without bathrooms	95.0%
Dwellings without treated water for drinking	78.0%

[1] Exchange rate as of 30 September 1999: US$1 = R$1.87.
Source: Florêncio *et al.,* 2001.

These conditions explain the high prevalence of moderate/severe undernutrition in children (21 percent, -2 Z score) and adults (19.5 percent, body mass index [BMI] <20 kg/m^2, calculated from Table 8). On the other hand, there is once again the coexistence, among adults, of undernutrition and overweight/obesity. Among women, the prevalences of undernutrition and obesity were higher than among men (Table 8).

TABLE 8
Nutritional classification, according to BMI, of adults living in a shantytown, Maceió, Alagoas

BMI	Sex		Total
	Males N (%)	Females N (%)	N (%)
Undernutrition (< 20 kg/m^2)	42 (16.9)	62 (22.1)	104 (19.5)
Normal (≥ 20 and <25 kg/m^2)	166 (66.1)	229 (45.9)	295 (55.5)
Overweight (≥ 25 and < 30 kg/m^2)	40 (15.9)	65 (23.1)	105 (19.7)
Obesity (>30 kg/m^2)	03 (1.2)	25 (8.9)	28 (5.3)
TOTAL	251 (47.2)	281 (52.8)	532 (100.0)

Source: Florêncio *et al*., 2001.

When we analysed the food intake of adults, we found that they had a very monotonous diet, with little diversity and of poor quality (Table 9). Energy intake (adjusted for stature) was well below energy requirements, even for the obese individuals (Table 10). One of the findings that caught our attention was the fact that the short women, either obese or undernourished, had a similar energy intake (Florêncio *et al*., 2003).

TABLE 9
Type of preparations consumed at main meals by men and women living in a shantytown, Maceió, Alagoas

Meal	No. of preparations reported	Preparations mentioned (by order of frequency)
Breakfast	13	Coffee w/ sugar, bread, corn porridge, fried egg, cream crackers, chicken, powdered milk, pumpkin, beef, sweet biscuit, fruit juice, salami and bologna sausage.
Snack	9	Bread w/ margarine, cream crackers, soft drink, fruit juice, sweet biscuit, coffee w/ sugar, sweets, bananas.
Lunch	12	Beans, rice, pasta, chicken, cassava flour, meat, fish, fried egg, fruit juice, coffee w/ sugar, jerked beef, beef liver.
Dinner	21	Coffee w/ sugar, porridge, rice, bread w/ margarine, beans, chicken, fried egg, meat, pasta, fish, cassava flour, jerked beef, milk, pumpkin, sweet biscuit, salami, sweet potatoes, sardines, yams.
Night snack	3	Coffee, cream crackers and milk.

Source: Florêncio *et al*., 2003.

Food intake, therefore, does not seem to be the most important differential between obese and malnourished women. Even among those from the group of obese women without short stature, the fat ingestion was 27 percent of the energy intake. Which other factors would be involved? One factor that certainly could have contributed to obesity is the reduction of physical activity caused by the move from the countryside to the city. These findings also reveal how complex is the relation between consumption of foods and nutritional status. There are several mechanisms that the body might bring into play to save energy, in situations of nutritional deficiency.

TABLE 10
Adequacy of the energy intake, according to sex and anthropometrical characteristics, of an adult population living in a shantytown, Maceió, Alagoas

	Energy intake	Short			Non-short		
		U	N	O	U	N	O
Men	Intake, kJ	5 882	6 812	7 226	6 501	7 815	8 373
	Requirement adjusted for stature, kJ	8 987	8 987	8 987	8 987	8 987	8 987
	% adequacy	65	76	80	68	81	87
Women	Intake, kJ	4 527	5 029	4 686	5 560	5 497	6 556
	Requirement adjusted for stature, kJ	7 234	7 234	7 234	7 234	7 234	7 234
	% adequacy	62	69	65	73	72	86

Note: U = undernourished (BMI < 20); N = normal (BMI ≥ 20 and <25); O = overweight + obesity (BMI ≥ 25).
Source: Florêncio *et al*., 2003.

THE EVOLUTION OF HEALTH PATTERNS

Child morbidity and mortality

The leading causes of death in children, diarrhoeal disease and acute respiratory infections, have progressively declined across most Brazilian regions. Mortality from diarrhoeal disease decreased over the decade of the 1990s from 9.3 to 6.8 percent. The highest mortality is in the northeast (11.9 percent) while in the southeast mortality from diarrhoeal disease is 3.3 percent. (Ministry of Health/Cenepi: SIM.) A persistent decline has been observed in the proportional mortality caused by acute respiratory infections (1991=10.5 percent; 1996=7.9 percent; 1998= 7.1 percent) (OPAS, 2002).

Adult morbidity and mortality

Close to 60 percent of the total deaths reported in the country in 1998 belonged to three groups: circulatory diseases (32.4 percent), external causes (14.9 percent) and neoplasias (14.0 percent), with slight variations in comparison with the values of 1991. During the years analysed, circulatory diseases were the most significant in all regions.

AIDS

There is a tendency towards a reduction of mortality through AIDS in all regions of the country, as a result of the adoption of therapy with anti-retroviral drugs and the implementation of a national policy of free distribution of these medicines. The AIDS mortality rate per 100 000 inhabitants fell from 9.6 in 1996 to 6.7 in 1998. Male AIDS mortality is two or three times greater than that of females, at 9.6 for males compared to 3.8 for females (OPAS, 2002).

The incidence of HIV/AIDS infection has stabilized in most regions. There is evidence however, that the incidence has been growing in the heterosexual segment, especially among women and newborns in the south and in socially less privileged population groups (OPAS, 2002).

Diabetes

Across the whole of Brazil, the mortality rate for diabetes is increasing. In 1998, the average rate of prevalence of diabetes mellitus in large Brazilian cities was 7.6 percent, varying from 5.2 percent in Brasília to 9.7 percent in São Paulo. The prevalence was approximately the same for men (7.5 percent) and women (7.7 percent). As might be expected, the rates rose with age: 30-39 years (2.7 percent), 40-49 years (5.5 percent), 50-59 years (12.7 percent) and 60-69 years (17.4 percent). Moreover, 46.5 percent of the diabetics did not have knowledge of their condition and 22.3 percent of those who were aware of being diabetic did not undergo any type of treatment (OPAS, 2002).

Cardiopathies and high blood pressure

From 1991 to 1998, there was an increase in the mortality rate through circulatory diseases in all regions of the country, except for the southeast, where a discrete reduction of ischemic heart and cerebral-vascular diseases was observed. For all of Brazil, the mortality rate per 100 000 persons for ischemic heart disease increased from 44.6 to 46.8 in 1991 and 1998 respectively, while the mortality rate for cerebral vascular disease was 51.6 for both periods. Mortality from all circulatory diseases is higher in males than in females. In 1998 the mortality rate for all circulatory diseases was 169.7 for males and 147.1 for females (OPAS, 2002).

Neoplasias

Between 1991 and 1998, the mortality rate through malignant neoplasias increased in all regions of Brazil. In 1998 malignant lung, stomach and prostate tumours predominated among males. In women, the breast, uterine cervix, lung and colon were the most frequent sites (OPAS, 2002).

The most frequent malignant neoplasia in Brazil is the non-melanoma skin neoplasia, with higher rates in the southeast, south and centre-west. Among males, most frequent were those of the prostate, stomach and lung (including the trachea and the bronchium), the latter two showing values well above those observed for women. Malignant breast neoplasia has the highest incidence among females (OPAS, 2002).

PROGRAMMES THAT ADDRESS FOOD AND NUTRITION

Pastoral da Criança (children's pastoral)

The programme with the widest national coverage (3 480 municipalities in 27 states) and local grassroots presence is the Pastoral da Criança, a non-governmental organization (NGO) linked to the Catholic Church, which operates with volunteer teams (134 344 active community leaders have visited 1 621 251 children). In recent years, its activities have expanded and been provided with better structures, as a result of partnerships with the federal government and universities. The main merits and the importance of this programme are centred on its wide outreach and in the mobilization of civil society that it promotes (REBIDIA, 2003).

Fome Zero (zero hunger)

The administration of President Lula launched in 2003 the Programa Fome Zero, which has been receiving sharp criticism in Brazil, because of its focus on aid and assistance (based on the distribution of food aid cards), its huge operational costs and relative inefficiency in regard to fighting the mechanisms that generate poverty and social exclusion in the country. Its outreach is still small (36 903 families) (MESA, 2003).

Centro de Recuperação e Educação Nutritional (CREN) (Centre for Nutritional Recovery and Education)

CREN was launched in 1994, as a university extension project. The objective of the project was to help fight malnutrition through research and development of methodologies suited to the Brazilian situation. The methodology developed includes the following.

- Active search through anthropometric surveys performed at the community level.
- Multiprofessional and interdisciplinary teamwork, with the participation of professionals from the fields of paediatrics, nutrition, social services, psychology, pedagogy and nursing.
- Treatment through home visits, outpatient clinics and day hospitals for the most severe cases.
- Identification and reinforcement of the social network of family and assessment.
- Nutritional education and psychological assistance.
- Offering courses to university-level (undergraduates and graduates) health care professionals, as well as health care workers and community health agents, focusing on practical activities in the communities; analysis of the information collected; follow-up of children's growth; nutritional education; and including a clear knowledge of the mechanisms that generate social exclusion.

A group of networks already exists in Brazil that uses the CREN methodology, in São Paulo, Campinas, Belo Horizonte, Salvador, Maceió, Rio de Janeiro, Pedras de Fogo, Itabuna and Fortaleza.

From the managerial point of view, CREN proposes the establishment of NGOs, with funding both from the state and the private sector, and a strong educational focus. The objective of this structure is to overcome the obstacles that have resulted in the failure of previous Brazilian governmental initiatives in the last decades, such as the discontinuity of social programmes; waste of financial resources; administrative and operational inefficiency; excessive managerial centralization; and lack of knowledge of the causes most often associated with poverty and social exclusion. In addition, there has been excessive political use of programmes.

The CREN team has published several studies on the subject, both in Brazil and abroad, in addition to running two Web sites (www.desnutricao.org.br) and (www.cren.org.br).

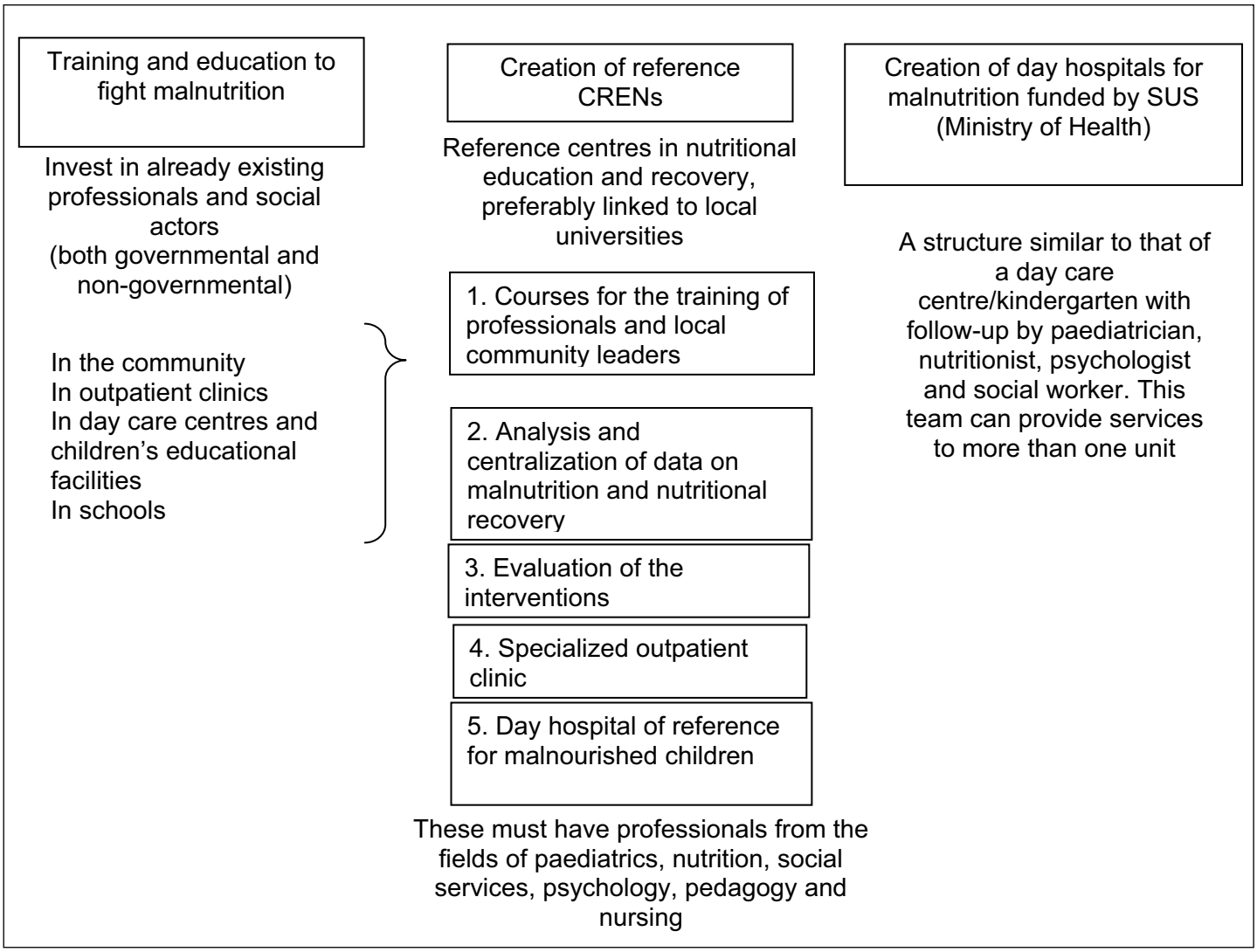
An outline of our proposal to fight malnutrition in Brazil, which has recently been presented to the Brazilian Federal Government, is presented as Figure 7.

CONCLUSION

Brazil has a wide geographic area but low population density – its growth has decreased considerably in the last decade. In economic terms, the country has grown just a little over 1 percent per year, and it presents one of the worst levels of social inequality, which has worsened even further during the past 40 years. The divide between rich and poor is structural, based mainly on educational differences and slave trade tradition. Given these characteristics, it is difficult to draw up a unified picture of the impact of globalization, based on national averages. The best description is a coexistence of characteristics typical of poor countries, especially in the north and northeast, with great technological advances, and the extreme momentum in the growth of the indicators of globalization, in the south and southeast. There are also certain specific characteristics, such as the great urban concentration (82 percent) of the population, and the concentration of the poor in shantytowns, already with the presence of factors that are typical of globalization, such as scant physical activity and consumption of industrialized foods. In addition, in recent years, the incidence of violence and drug addiction has grown systematically.

The most suitable programmes to fight poverty and social injustice, as well as to improve health and nutritional conditions, require direct and sustained contacts in and with poor communities (which are characterized by significant degrees of isolation and exclusion). Greater inclusion in the communities, with a robust educational component and attention to the improvement of living conditions, as well as level of education and job availability, are actions that can mobilize and bring together government, society and universities.

FIGURE 7
Framework proposed by CREN to fight malnutrition in Brazil



Bibliography

A Tribuna do Norte. 2002. *Televisão é o principal lazer de carentes.* 19 September 2002 (www.tribunadonorte.com.br/anteriores/020917/natal/natal4.html). Accessed September 2003.

Almeida, S.S., Nascimento, P.C.B.D & Quaioti, T.C.B. 2002. Amount and quality of food advertisements on Brazilian television. *Rev. Saúde Pública*, 3: 353-5.

ANFAVEA. 2003. *Anuário Estatístico da Indústria Automobilística Brasileira*. Associação Nacional dos Fabricantes de Veículos Automotores (www.anfavea.com.br). Accessed September 2003.

BENFAM. 1996. Sociedade Civil Bem-Estar Familiar no Brasil. 1997. PNDS - Pesquisa Nacional sobre Demografia e Saúde, 1996. Rio de Janeiro, Brazil. Ed. Rio de Janeiro.

BNDES. 1999a. *Complexo eletrônico: diagnóstico e perspectivas*. Banco Nacional de Desenvolvimento Econômico e Social (BNDES) Setorial, Rio de Janeiro, No. 10, p. 269-284 (www.bndes.gov.br). Accessed September 2003.

BNDES. 1999b. *A internet e os provedores de acesso*. Banco Nacional de Desenvolvimento Econômico e Social (BNDES) Setorial, Rio de Janeiro, Brazil. No. 10, p. 115-172 (www.bndes.gov.br). Accessed September 2003.

BNDES. 2000a. *Os mercados de automação bancária e comercial*. Banco Nacional de Desenvolvimento Econômico e Social (BNDES) Setorial, Rio de Janeiro, Brazil. No. 11, p. 47-70 (www.bndes.gov.br). Accessed September 2003.

BNDES. 2000b. *Aspectos atuais do varejo de alimentos no mundo e no Brasil.* Banco Nacional de Desenvolvimento Econômico e Social (BNDES) Setorial, Rio de Janeiro, Brazil. No. 11, p. 101-122 (www.bndes.gov.br). Accessed September 2003.

Campos, A., Pochmann, M., Amorim, R. & Silva, R., eds. 2003. *Atlas da exclusão social no Brazil, volume 2: dinâmica e manifestação territorial.* São Paulo, Brazil. Cortez Editora.

de Mello Jorge, M. Helena. 2000. Acidentes e violências no Brasil: Breve análise de suas fontes de dados. *In* IPEA. *Forum de debates - Criminalidade, Violência e Segurança Pública no Brasil: Uma Discussão sobre as Bases de Dados e Questões Metodológicas Acidentes e violências no Brasil: breve análise de suas fontes de dados*. Instituto de Pesquisas Econômicas Aplicadas (www.ipea.gov.br). Accessed September 2003.

Fernandes, M.T., Sesso, R., Martins, P.A. & Sawaya, A.L. 2003. Increased blood pressure in adolescents of low socio-economic status with short stature. *Pediatric Nephrology*, 18: 435-439.

Florêncio, T.M., Ferreira, H.S., Cavalcante, J.C., Luciano, S.M. & Sawaya, A.L. 2003. Food consumed does not account for the higher prevalence of obesity among stunted adults in a very low income population in the Northeast of Brazil (Maceio, Alagoas). *Eur. J. Clin. Nutr*., 11:1437-46.

Florêncio, T.M., Ferreira, H.S., De França, A.P., Cavalcante, J.C. & Sawaya, A.L. 2001. Obesity and undernutrition in a very low-income population in the city of Maceiò, northeastern Brazil. *Br. J. Nutr*., 86: 277-285.

Grillo, L.P., De Carvalho, L.R., Silva, A.C., Verreschi, I.T.N. & Sawaya, A.L. 2000. Influência das condições socioeconômicas nas alterações nutricionais e na taxa de metabolismo de repouso em crianças escolares moradoras em favelas no município de São Paulo. *Rev. Assoc. Med. Bras*., 46: 7-14.

Grupo de mídia São Paulo. *Mídia Dados 2* (www.gm.org.br). Accessed September 2003.

Hoffman, D.J., Sawaya, A.L., Verreschi, I., Tucker, K. & Roberts, S.B. 2000.Why are nutritionally stunted children at increased risk of obesity? Studies of metabolic rate and fat oxidation in shantytown children from São Paulo, Brazil. *Am. J. Clin. Nutr*., 72: 702-707.

IBAM. 2001. Equipamentos culturais e de lazer existentes nos municípios. Instituto Brasileiro de Administração Municipal Série Estudos Especiais No. 31 Rio de Janeiro, Brazil. (www9.cultura.gov.br/relats/sav95_02.pdf). Accessed September 2003.

IBGE. 1974. *ENDEF – Estudo Nacional Despesa Familiares, 1974***.** Instituto Brasileiro de Geografia e Estatística. (www.ibge.gov.br). Accessed September 2003.

IBGE. 2001. *National Home Sampling Survey*. Instituto Brasileiro de Geografia e Estatística (www.ibge.gov.br). Accessed September 2003.

INAN. 1989. *PNSN - Pesquisa Nacional sobre Saúde e Nutrição. Resultados Preliminares 1989.* Instituto Nacional de Alimentação e Nutrição. Brasília.

IPEA. 2000. Forum de debates - Criminalidade, Violência e Segurança Pública no Brasil: Uma Discussão sobre as Bases de Dados e Questões Metodológicas. Acidentes e violências no Brasil: breve análise de suas fontes de dados. Instituto de Pesquisas Econômicas Aplicadas (www.ipea.gov.br). Accessed September 2003.

IPEA. 2002. *Empregos no Brasil. Volume I: Sessão Informativa sobre Política 2002. Relatório conjunto* Banco Mundial/IPEA. Instituto de Pesquisas Econômicas Aplicadas (www.ipea.gov.br). Accessed September 2003.
Jornal da Tarde. 2002 *Comer fora é um mercado de R$3,5* bi. 22 September.
MESA. 2003. *Programa Fome Zero*. Ministério Extraordinário de Segurança Alimentar e Combate à Fome. (www.fomezero.gov.br/html/pfz_1070.htm). Accessed September 2003.
Ministério da Saúde. (www.saude.gov.br). Accessed September 2003.
Ministério dos Transportes. 2003. (www.transportes.gov.br). Accessed September 2003.
Monteiro, C.A., Conde, W.L. & Popkin, B.M. 1999. Secular trends in obesity by social class: northeast and southeast of Brazil, 1975-1989-1997. *Arq. Bras. Endocrinol. Metab*., 3: 1-14.
Monteiro, C.A., Mondini, L. & Costa, R.B. 2000. Secular changes in dietary patterns in the metropolitan areas of Brazil (1988-1996). *Rev. Saúde Pública*, 34: 251-8.
Oliveira, J.E.D. de, Cunha, S.F. de C., Marchini, J.S. 1996. *A desnutrição dos pobres e dos ricos: dados sobre a alimentação no Brasil*. São Paulo, Brazil. Ed. Sarvier.
OPAS. 2002. *Indicadores básicos para a saúde no Brasil: conceitos e aplicações*. Organização Pan-Americana da Saúde (www.opas.org.br). Accessed September 2003.
REBIDIA. 2003. *Pastoral da criança*. Rede Brasileira de Informação e Documentação Sobre Infância e Adolescência
(www.rebidia.org.br/pastoral/index1.html). Accessed September 2003.
Sawaya, A.L., Martins, P., Hoffman D. & Roberts, S.B. 2003. The link between childhood undernutrition and risk of chronic diseases in adulthood: a case study of Brazil. *Nutr. Rev*., 5: 168-75.
Sawaya, A.L. 1997. Transição: desnutrição energético-protéica e obesidade. *In* A.L.Sawaya, ed. *Desnutrição Urbana no Brasil em um Período de Transição*. São Paulo, Cortez Editora.
Sawaya, A.L., Grillo, L.P., Verreschi, I., Silva, A.C. & Roberts, S.B. 1998. Mild stunting is associated with higher susceptibility to the effects of high fat diets: studies in a shantytown population in São Paulo, *Br. J. Nutr*., 128: 415-420.
SEADE (Fundação Sistema Estadual de Análise de Dados.) 2002. *Ocupação Feminina e Flexibilização das Relações de Trabalho na RMSP – 1989-2001*. Mulher e Trabalho. São Paulo, 2002. No. 8 (www.seade.gov.br). Accessed September 2003.
SEHAB (Secretaria da Habitação). 1994. São Paulo. Favelas na cidade de São Paulo. São Paulo *apud. Transição: desnutrição energético-protéica e obesidade.* São Paulo, Cortez Editora.
Sichieri, R., Coitinho, D.C., Pereira, R.A., De Marins, V.M.R. & Moura, A.S. 1997. Variações temporais do estado nutricional e do consumo alimentar no Brasil. *Rev. Saúde Coletiva*, 7: 31-50.
UNPD. 2001. *World urbanization prospects: the 2001 revision.* United Nations Secretariat, Department of Economic and Social Affairs, Population Division. ESA/WP/.173
WHO. 1997. *Global database on child growth and malnutrition***.** World Health Organization **(**www.who.int/nutgrowthdb). Accessed September 2003.

Nutrition transition in Chile: a case study

Fernando Vio and Cecilia Albala[1]

INTRODUCTION

Latin American countries have seen important demographic, epidemiological and nutritional changes in the last decades. The demographic transition has occurred through a sustained decrease in fecundity, an increase in life expectancy and changes in the age structure of the population. These demographic changes have modified the epidemiological profile of the population. Specifically, the prevalence of non-communicable chronic diseases has been increasing. Nutritional changes similar to those in more industrialized countries have resulted in an increase in the prevalence of obesity. The consumption of diets with a high caloric density and sedentary lifestyles are closely related to the increase in the frequency of nutrition-related diseases, diabetes, hypertension, cardiovascular diseases and some types of cancer (WHO/FAO, 2003).

The prevention and management of these problems in Latin America are great challenges, considering the levels of poverty and inequality of the region, the financial restrictions of the public sector and a historical institutional weakness.

DEMOGRAPHIC INDICATORS IN LATIN AMERICA

The main demographic indicators of selected Latin American countries and Canada are described in Table 1. According to the Pan American Health Organization and the World Health Organization methodology (PAHO/WHO, 2001), countries are classified in three categories: very low child and very low adult mortality rate; low child and low adult mortality rate; and high child and high adult mortality rate. In another publication (Albala, Vio and Uauy, 2003) and according to the last available report of WHO (2002), Chile was classified in the second category (low child and low adult mortality rate). However, considering the Chilean data of the 2002 national population census (National Institute of Statistics, 2002), Chile belongs to the first category, which confirms the rapid transition changes that occurred in the last decades in the country (Vio and Albala, 2000; Albala *et al*., 2001a).

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TABLE 1
Demographic indicators of selected Latin American countries and Canada, 2001

Countries/ mortality stratum	% pop. <15	% pop. ≥60	% annual population growth	Total fertility rate	Crude death rate	Infant mortality rate	Life expectancy at birth
Very low child and very low adult mortality rate							
Canada	18.4	17.2	1.0	1.6	7.5	5.3	79.3
Cuba	20.3	14.3	0.3	1.6	7.2	7.2	76.4
Chile	25.7	11.4	1.2	2.1	5.2	8.9	76.3
Low child and low adult mortality rate							
Brazil	27.9	8.0	1.4	2.2	7.2	31.8	68.7
Costa Rica	32.3	7.5	2.7	2.7	4.2	10.2	76.1
Mexico	32.2	7.2	1.4	2.5	5.1	14.5	73.0
High child and high adult mortality rate							
Bolivia	39.1	6.2	2.2	3.9	8.2	67.0	63.5
Ecuador	32.9	7.1	1.7	2.8	5.8	30.0	70.5
Guatemala	43.0	5.3	2.6	4.4	6.8	49.0	65.6
Haiti	39.4	5.5	1.6	4.0	11.7	80.3	54.8
Nicaragua	42.1	4.7	2.7	3.9	5.4	45.2	69.3
Peru	32.4	7.5	1.6	2.6	6.2	43.0	69.8

Source: PAHO/WHO, 2001.

DEMOGRAPHIC, SOCIO-ECONOMIC, EPIDEMIOLOGICAL AND NUTRITION CHANGES IN CHILE

In the last decades Chile has undergone important changes which are described in the following Tables. From the demographic point of view, population changes are significant, with a decrease of the population under 15 years of age from 39.2 percent in 1970 to 25.7 percent in 2002. On the other hand, the population over 65 years of age increased from 5 to 7.2 percent in the same period. The total fertility and birth rate suffered an important decrease in the period, with a fall in the percentage of annual population growth from 1.8 to 1.3 percent. The infant mortality rate also decreased dramatically from 82.2 in 1970 to 8.9 in 2002. As a consequence, life expectancy has increased from 60.5 years in men and 66.8 years in women in 1970 to 73.2 and 79.5 in 2002, respectively.

Chile was a very urbanized country before the 1970s, with more than 75 percent of the population living in urban settlements. However, the urbanization process continued in the last decades to reach 86.7 percent of the population living in cities (National Institute of Statistics, 2002). This process has positive effects: increasing access to drinking-water and dwellings with sewers, increased literacy rates (Table 3) and better access to housing and health services. On the other hand, the urbanization process produces an increase in risk factors for chronic diseases, such as changes to diets with more fat, sugar and salt; an increasing sedentary lifestyle; more access to tobacco, alcohol and drugs; and also increasing environmental and psychosocial problems.

TABLE 2
Chilean demographic indicators

Indicators/years	1970	1982	1992	2002
% population <15	39.2	32.2	29.4	25.7
% population ≥65	5.0	5.8	6.6	7.2
Crude death rate	8.7	6.1	5.4	5.2
Infant mortality rate	82.2	23.6	14.3	8.9
Total fertility rate	3.4	2.8	2.6	2.1
Birth rate	26.4	23.8	21.6	17.1
% annual population growth	1.8	1.8	1.6	1.3
Life expectancy at birth				
male	60.5	67.8	68.7	73.2
female	66.8	74.8	75.8	79.5

Source: National Institute of Statistics, 2002.

TABLE 3
Trends in socio-economic indicators, Chile 1970-2002

Indicators/years	1970	1982	1992	2002
% urban population	75.1	82.2	83.5	86.7
GNP per capita*	2 230	2 148	3 020	4 900
Literacy rate	89.0	91.8	94.3	96.0
Access to drinking-water (% population)	58.0	87.0	95.2	99.7
% urban dwellings with sewers	35.0	62	84.4	94.1
Health expenditure per capita/ US$	52	76	116	369

Source: National Institute of Statistics, 2002.

TABLE 4
Proportion of causes of death from total causes, 1970-2000

Groups of causes	1970*	1982†	1992†	2000
Cardiovascular diseases (390-459)† (A80-88)* (I00-I99)#	22.3	27.6	29.0	27.9
Malignant tumours (140-208)† (A45-59)* (C00-D48)#	12.0	16.8	20.0	24.2
Injuries (800-999)† (AN138-150+AE138-149)* (V00-Y98)#	19.0	12.1	12.0	9.8
Respiratory (460-519)† (A89-96)* (J00-J99)#	17.4	8.5	11.1	10.5
Digestive (520-579)† (A97-104)* (K00-K93)#	6.9	8.6	6.3	7.2
Ill defined (780-799)† A137* (R00-R99)#	4.5	8.8	5.6	3.9
Infectious and parasitic (1-139)† A1-44* (A00-B99)#	10.9	3.8	2.9	2.6
Perinatal causes (760-779)† A131-135* (P00-P96)#	5.0	3.5	1.9	1.2
All others	2.0	10.3	11.2	12.7
Total	100	100	100	100

* ICD-VIII
† ICD-IX
# ICD-X
Source: National Institute of Statistics, 2000.

Demographic changes and increasing risk factors for chronic diseases have meant significant changes in the epidemiological profile of the population since the 1970s, which are described in Table 4. Cardiovascular diseases and tumours increased from 34.3 percent in 1970 to 52.1 percent in 2000. On the other hand, infectious diseases and perinatal causes decreased from 15.9 to 3.8 percent in the same period. Injuries and respiratory causes have also been reduced. These rapid changes occurred in a short time compared with other epidemiological transition situations (Frenk, Bobadilla and Lozano, 1991).

Despite the increase in the proportion of the total causes of death for cardiovascular diseases, and as a consequence of the decreased crude death rate (Table 2), the trend in the rates of cerebral-vascular disease and ischemic heart disease was also reduced from 1970 to 2000. However, the death rates for other diet-related diseases such as diabetes, breast cancer, prostate cancer and gall bladder cancer increased. In the last two cases, rates were almost three times the initial rate (Table 5).

TABLE 5
Mortality[1] by diet-related diseases in Chile, 1970-2000

Causes	1970	1980	1990	2000
Cerebrovascular disease	118.7	106.7	85.4	68.5
Ischemic heart disease	107.8	86.9	81.3	70.5
Diabetes	15.0	15.9	13.6	23
Breast cancer[2]	13.5	14.6	16.2	18.5
Prostate cancer	9.5	19.5	10.8	24.1
Gall bladder cancer	6.6	-	14.1	16.9

[1] Rates ≥15 years of age per 100 000.
[2] Females.
Source: National Institute of Statistics, 2000.

With the urbanization process, diets changed dramatically at the end of the 1980s and at the beginning of the 1990s. From 1982 to 1986 there was a huge economic crisis in Chile with a fall of 14 percent of the gross domestic product (GDP) in 1982 and 2 percent in 1983, with high unemployment and an increase in poverty (Tokman, 1985). In this period there was malnutrition in Chile but, after a few years, at the end of the 1980s, economic growth began. For the poor, more than 50 percent of incomes went on food expenditure, but unfortunately to buy food with a high proportion of fat, sugar and salt. On the contrary, consumption of cereals, legumes and other fibre-rich foods, such as vegetables and fruit, remained stable or declined (Table 6) (Crovetto, 2002).

Unbalanced and excessive food intake is associated with other lifestyle changes related to the increasing urbanization process in Chile, such as sedentary activities, stress, alcohol intake and smoking. In general, all these risk factors for non-communicable diseases are worst in low socio-economic levels (Table 7).

TABLE 6
Trends in food availability (by food group) in Chile, 1980, 1990 and 2000[1]

	1980	1990	2000	% change
Kcals/ per capita/day	2664	2519	2870	+ 7.8
% as fat per capita	20.4	22.0	26.6	+ 30.4
Vegetable fat g/per capita/day	30.9	27.5	39.4	+ 27.8
Animal fat g/per capita/day	29.6	33.9	45.4	+ 53.6
Cereals and pulses kg/per capita/year	159.1	143.4	142.6	-10.4
Vegetables and fruit kg/per capita/year	170.5	144.6	168.4	-1.2

[1]Average figures for 1979-1980, 1989-1990, 1999-2000.
Source: FAOSTAT data, 2003.

TABLE 7
Prevalence of risk factors for chronic diseases by socio-economic level (SEL), 25-64 years, Valparaiso, Chile, 1997

Risk factor	Socio-economic stratum			p value
	High	Medium	Low	
HDL cholesterol ≤ 35 mg%	13.8%	16.1%	12.6%	0.20
Total cholesterol ≥200 mg%	49.0%	47.1%	45.7%	0.68
Hypertension ≥140/90 mm hg	9.3%	9.8%	14.2%	0.00
Sedentarism (in leisure time)	78.9	83.1	89.4	0.00
Overweight BMI ≥ 25kg/m^2	56.4	61.0	65.3	0.00
Smoking habit (current)	39.8	39.5	42.9	0.22

Source: Jadue *et al.*, 1999.

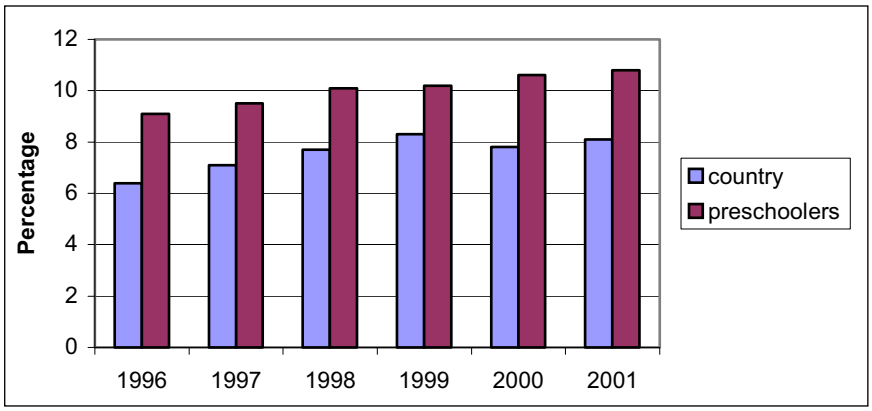
The epidemiological and nutritional transition of Chile's native populations over the past 20 years is a clear example of the situation described above. We have examined over the past five years the effect of changes of socio-economic and cultural conditions on obesity prevalence and type-2 diabetes (TTD), in the Mapuche and Aymara groups. Our current data from rural communities show a threefold increase in the prevalence of diabetes, 3.5 percent in contrast to the 1 percent reported in 1985. Moreover, as the Mapuche migrated to urban zones of the major metropolis, Santiago, the prevalence of TTD rose to 9.8 percent. This population, believed to be genetically protected from TTD, in fact shows increased susceptibility to diabetes relative to the general population. This is clearly the effect of changing dietary patterns and physical inactivity in the urban setting (Pérez-Bravo *et al*., 2001). The early report of a low prevalence of diabetes in the presence of high rates of obesity in Aymara and Mapuche Indians was not upheld by our recent studies, suggesting that the apparent protection of aboriginal people to nutrition-related chronic disease is dependent on diet and physical activity patterns (Uauy, Albala and Kain, 2001).

Most aboriginal populations today have changed their diet and physical activity patterns, following the model of industrialized societies. They now derive their diets completely or in large part from refined grains and high-sugar, high-fat foods (with elevated trans- and saturated fatty acid content) that are low in fibre. There is a decreased consumption of legumes and other plant-based foods. Life in urban and progressively even more in rural areas is predominantly sedentary and physically inactive. In these circumstances it is not surprising that obesity, insulin resistance and type-2 diabetes have reached epidemic proportions.

The combination of the change in diets and a sedentary lifestyle triggers increasing adiposity. The progressive increase in overweight and obesity is more prevalent in low socio-economic groups who have improved their incomes and bought not only high-fat/high-carbohydrate energy-dense food but also more televisions, increasing the number of hours spent in front of the television to an average of two to three hours on weekdays and three to four hours at the weekend. Data obtained in Santiago demonstrate that, besides inactivity, television viewing stimulates a child's preference for certain television commercials and increases the consumption of snacks in front of the television and other food purchased by children at school (Olivares *et al.*, 1999).

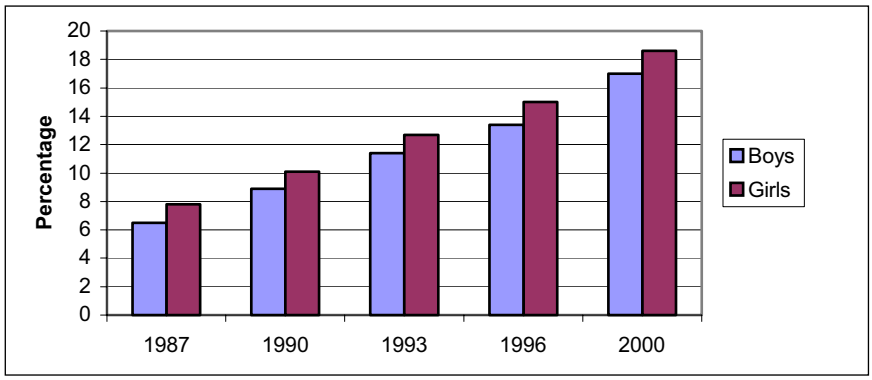
All these factors have increased the prevalence of obesity in preschool children (Figure 1), in first-grade children (six years old) (Figure 2), in pregnant women (Figure 3) (Albala *et al*., 2001b) and in younger and older adults measured by different surveys in the country (Figures 4 and 5) (Vio, Albala and Crovetto, 2000; Ministry of Health, 2003).

FIGURE 1
Prevalence of obesity in children two to five years old (country and preschool), Chile 1996-2001



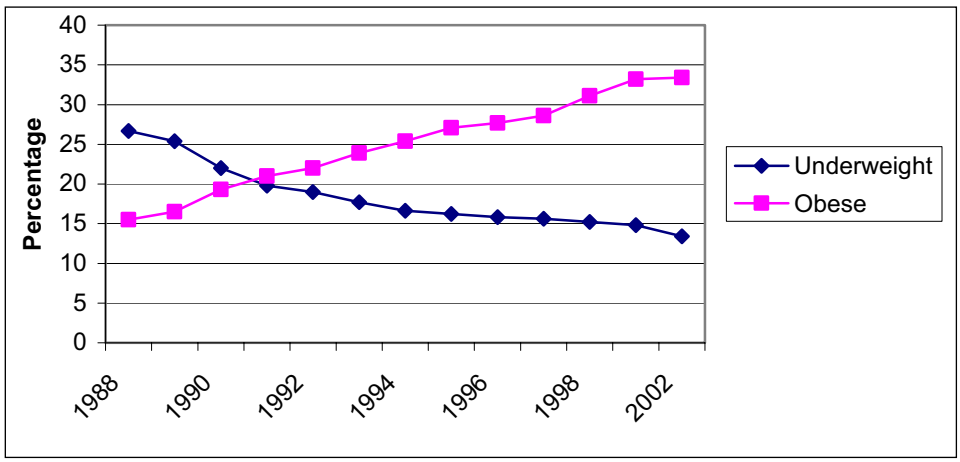
Sources: Ministry of Health (2003) and Junta Nacional de Jardines Infantiles (National board for Day care centres statistics).

FIGURE 2
Trends in prevalence of obesity[1] in first-grade schoolchildren, Chile 1987-2000



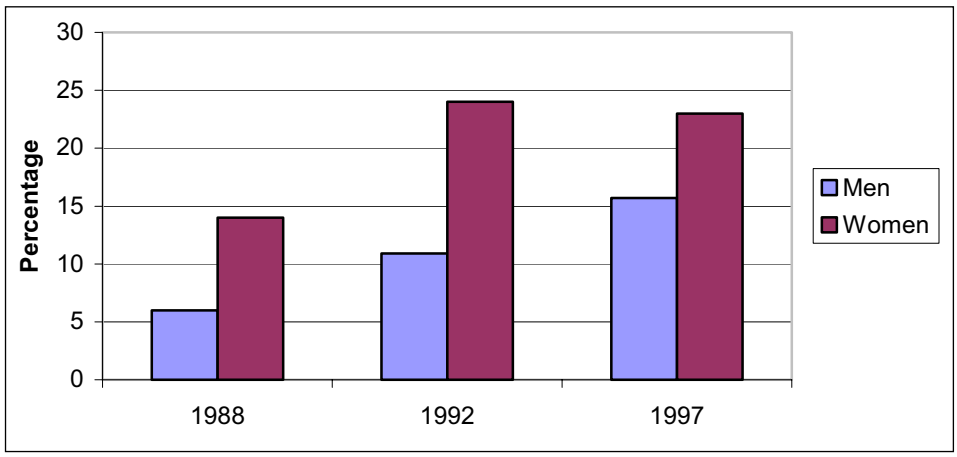
Source: Ministry of Education, 1987-2000.
[1] Weight/height>2 SD.

FIGURE 3
Prevalence of obesity and underweight in pregnant women,[1] Chile 1987-2002



Source: Ministry of Health, Chile, 2003.
[1] Ministry of Health reference for pregnant women.

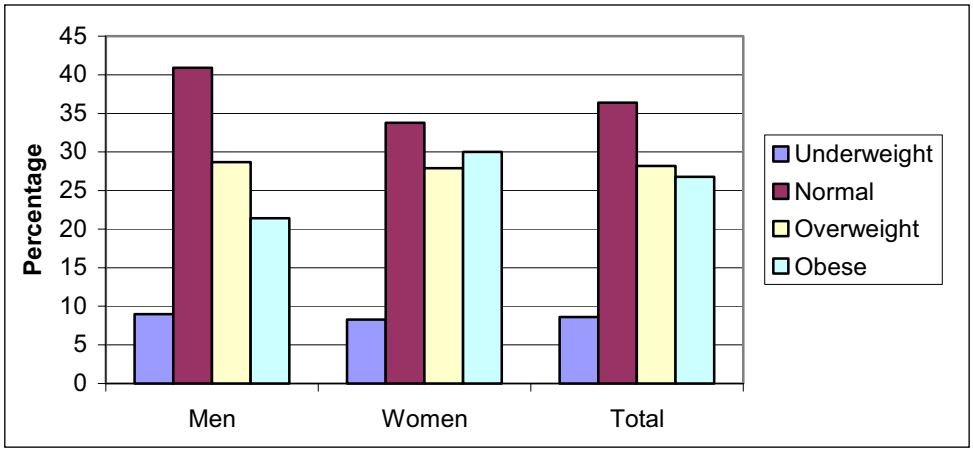
FIGURE 4
Obesity prevalence in adults, Santiago 1988-1992, Valparaiso 1997



Source: Santiago Metropolitan Region Surveys 1988 and 1992 (Dra X. Berríos); Jadue *et al.,* 1999.

In all cases, the increasing obesity is impressive and constitutes the first nutrition problem in the country and one of the most important public health issues. Unfortunately, a situation similar to that in Chile is being observed in other Latin American countries (PAHO, 2000; Kain, Vio and Albala, 2003).

FIGURE 5
Nutritional state in the elderly, Chile 2002



Source: Ministry of Health, 2003.

PROGRAMMES TO ADDRESS FOOD AND NUTRITION ISSUES

In the past, Chile was able to decrease malnutrition in a relatively short time with the implementation of adequate policies related to primary prevention (National Complementary Food Programme for all pregnant and lactating women and for all children under six years of age attending the high-coverage health programmes); secondary prevention for pregnant and lactating mothers and children who were at risk or had mild malnutrition; and tertiary prevention or rehabilitation for moderately or severely malnourished children who were hospitalized in special recovery centres (Vio and Albala, 2000).

As part of the epidemiological and nutritional transition in Chile, in 1998 the Ministry of Health changed the traditional maternal and child policies with new priorities based on cardiovascular diseases, cancer, injuries and mental health problems. The main conditioning factors for these health problems are food and nutrition, physical activity, tobacco and psychosocial and environmental factors. To address these factors, a strategic plan with goals for the period 2000-2010 was established, based on an intersector organization integrated by 28 governmental organizations and the National Board for Health Promotion (VIDA CHILE), which was decentralized to 12 regions and 308 counties. Strategies were developed for each one of the conditioning factors, which were implemented at the local level in preschool and school facilities, workplaces and municipalities. The main accomplishments of this policy have been a decentralized management model for health promotion with projects and programmes working throughout the country, goals to be fulfilled and a baseline founded on a national survey carried out in November 2000. At present, the challenge needs an integrated effort to change the behaviour of the population regarding food, physical activity, tobacco consumption and stress. This is difficult in the current environment, which promotes increasing the intake of fast food and soft drinks, a greater use of cars and electrical appliances, minimal physical activity, and an increased consumption of tobacco and other addictive substances.

The accomplishments in the food and nutrition aspects are in part a result of the elaboration of dietary guidelines in 1995-1997 by a group of experts following the methodology established by FAO with seven messages for the population (Ministry of Health, 1997); the reformulation of the food and nutrition programmes (National

Complementary Food Programme at the Ministry of Health and School Food Programme and Preschool Food Programmes at the Ministry of Education); and Food Sanitary Regulations for the industry to produce more healthy and safe food (Vio and Albala, 2000).

But the main advances in the food and nutrition area are related to education at the preschool and basic school level. In 2001 and 2002 an FAO project (food and nutrition education at the basic schools) was carried out in ten primary schools in four regions of the country to elaborate a methodology and materials to introduce food and nutrition contents in the basic education curricula (FAO, 2001). This project has been successful in producing the methodology and materials and is now in the phase of training schoolteachers throughout Chile in utilizing the methodology and materials in the 11 000 basic primary schools in the country. There is another ongoing project to integrate food and nutrition education with physical activity for preschool children and there is a campaign to educate consumers at the supermarkets with materials to induce the purchasing of more healthy food.

To cope with the high sedentary aspect of the Chilean population, physical activity guidelines were developed in 2001-2002 with six messages (Salinas, Vio and Bahamondes, 2003). Additionally, there is a specific policy to improve the number and intensity of physical activity hours at day care centres and primary schools in the whole country as well as to introduce physical activity in primary health care facilities through an agreement between the Ministry of Health and the National Institute of Sports.

CONCLUSION

Demographic, epidemiological and nutrition changes were so rapid in Chile that maternal and child policies were not changed successfully until the end of the 1990s. However, in 1998 a strong health promotion policy was implemented to cope with the increasing obesity in the population and the high levels of sedentarism. This policy has been successful in creating a state policy backed with funding, regulations and high coverage in the country but it is still insufficient for the magnitude of the problem.

Bibliography

Albala, C., Vio, F., Kain, J. & Uauy, R. 2001a. Nutrition transition in Chile: determinants and consequences. *Public Health Nutr.,* 5: 1-7.
Albala, C., Vio, F., Kain, J. & Uauy, R. 2001b. Nutrition transition in Latin America: the case of Chile. *Nutr. Review,* 56 : 170-176.
Albala, C., Vio, F. & Uauy, R. 2003. The global burden of nutritional disease: the case of Latin America. *In* M.J.G. Farthing & D. Mahalanabis, eds. *The control of food and fluid intake in health and disease*. Nestlé Nutrition Workshop Series. Pediatric Program. Vol. 51. Nestec Ltd, Vevey/Lippincott, Williams & Wilkins, Philadelphia, United States.
Crovetto, M. 2002. Changes in food structure and food consumption in Gran Santiago households 1988-1997. *Rev. Chil. Nutr.,* 29: 24-32.
FAO. 2001. Technical Cooperation Project. Educación en alimentación y nutrición en escuelas básicas. TCP/CHI/0065, 2001-2003. University of Chile, Ministry of Education, INTA.
FAO. 2003. *FAO food balance sheets, 1979, 1980, 1989, 1990, 1999 and 2000* (www.fao.org). Accessed January 2003.
Frenk, J., Bobadilla, J.L. & Lozano, R. 1991. *The epidemiologic transition: the Latin American experience.* Seminar on Causes and Prevention of Adult Mortality in Developing Countries, Santiago, Chile. International Union for the Scientific Study of Population (IUSSP).
Jadue, L., Vega, J., Escobar, M.C., Delgado, I., Garrido, C., Lastra, P., Espejo, F. & Peruga, A. 1999. Risk factors for chronic non-communicable diseases: methods and results of CARMEN program basal survey. *Rev. Med. Chile,* 127: 1004-1013.
Kain, J., Vio, F. & Albala, C. 2003. Obesity trends and determinant factors in Latin America. *Cad. Saude Pública, Rio de Janeiro*; 19: (suppl.1): S77- S86.
Larenas, G., Arias, G., Espinoza, O. *et al.* 1985. Prevalence of diabetes mellitus in an indigenous community (Mapuche) in IX Region. *Chile Rev. Med*., 113: 1121.
Ministry of Health. 1997. *Guías de alimentación para la población chilena*. C. Castillo, R. Uauy & E. Atalah, eds. Santiago de Chile, Ed. Diario La Nación.
Ministry of Health. 2003. Departamento de Estadísticas e Información de Salud (www.minsal.cl). Accessed September 2003.
National Institute of Statistics. 2000. *Demographic Annual Reports 1970, 1982, 1992 and 2000.* Chile, INE.
National Institute of Statistics. 2002. *Census 1970, 1982, 1992 and 2002*. Chile, INE.
Olivares, S., Albala, C., García, F. & Jofré, I. 1999. Television publicity and food preferences of school-age children of the Metropolitan Region. *Rev. Med. Chile,* 127: 791-799.
PAHO. 2000. *Obesity and poverty. A new public health challenge*. M. Peña & J. Bacallao, eds. Scientific Publication No. 576. Washington, DC.
PAHO/WHO. 2001. *Special Program for Health Analysis*. Regional Core Health Data Initiative. Technical Health Information System. Washington, DC, PAHO (www.paho.org). Accessed September 2003.
Pérez-Bravo, F., Carrasco, E., Santos, J.L., Calvillan, M., Larenas, G. & Alba, C. 2001. Prevalence of type 2 diabetes and obesity in a rural Mapuche population from Chile. *Nutrition,* 17: 236-38.
Salinas, J., Vio, F. & Bahamondes, C., eds. 2003. *Guías de vida activa para la población chilena*. Santiago de Chile, Ed. Andros Impresores.
Tokman, V. 1985. Wages and employment in international recessions: recent Latin American experience. *In* K.S. Kim & D.F. Ruccio, eds. *Debt and development in Latin America.* Notre Dame, Canada, University of Notre Dame Press.
Uauy, R., Albala, C. & Kain, J. 2001. Obesity trends in Latin America: transiting from under- to overweight. *J. Nutr*., 131: 893-898.
Vio, F. & Albala, C. 2000. Nutrition policy in the Chilean transition. *Public Health Nutr*. 3: 49-55.
Vio, F., Albala, C. & Crovetto, M. 2000. Health promotion in the context of the epidemiological transition in Chile. *Rev. Chil. Nutr.,* 27: 21-29.
WHO. 2002. *The world health report 2002: reducing risks, promoting healthy life*. Geneva, World Health Organization.
WHO/FAO. 2003. *Diet, nutrition and the prevention of chronic diseases*. Report of a Joint WHO/FAO Expert Consultation. WHO Technical Report Series No. 916. Geneva, World Health Organization.

Impact of globalization on food consumption, health and nutrition in urban areas of Colombia

Luis F. Fajardo[1]

INTRODUCTION: TRENDS AND CHANGE

Colombia's population, estimated at 44 million, occupies an area of just over 1 million km^2. About a quarter of the population lives in rural areas. Natural resources are plentiful, and include agricultural land, water for irrigation, energy resources (oil, natural gas and coal), and minerals such as nickel, gold and emeralds. Colombia has a significant advantage in terms of its location: it is close to North America with coasts on both the Pacific and Atlantic Oceans. Mountainous terrain, however, makes internal transportation costly and slows physical and social integration. A wealth of physical resources, a literate and dependable workforce, a robust private sector, competent macroeconomic management and political stability are major factors that have explained Colombia's good record of economic development and social improvements over the last 30 years. Nevertheless, the growth of the illegal drug industry, the presence of active insurgent groups and the pressure of external shocks have had an increasingly negative impact on the overall economic performance of the country.

Trends in urbanization and demographic pyramid

In the twentieth century Colombia experienced formidable growth in its population and in the second half of the century it also experienced an intensive process of internal migration from rural to urban areas. In 1938, 70 percent of the population lived in rural areas; Table 1 shows the evolution of the percentage of the population living in urban areas up until the present estimate of 75 percent (DANE, 2003a). The rural population increased from 6 million in 1938 to 10 million in 1990 whereas the urban population increased from 2.7 million in 1938 to 22.9 million in 1990. The growth of individual cities has also been important. In 1985, 32 percent of the population resided in eight main cities. According to UN population projections, by 2005 the population of Bogotá will reach 7.5 million, while that of Cali and Medellín will be 2.5 and 5.2 million respectively (United Nations Population Division, 2002).

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TABLE 1
Percentage distribution of the population by urban and rural location

Year	Urban	Rural
1938	30	70
1951	43	57
1964	52	48
1973	61	39
1985	65	35
1993	75	25
2000	75	25

Source: DANE, 2003a.

Equally important have been changes in demographic factors. The total fertility rate for the period 1997-2000 was 2.6 children per female, indicating a decline from earlier years. Previous fertility rates were 6.8, 3.2 and 3.0 in 1965, 1984-1986 and 1993-1995, respectively. In urban communities fertility rates decreased from 2.7 in 1985 to 2.3 in 2000 (Ojeda, Ordóñez and Ochoa, 2000). The achievements in this field are thought to be the results of family planning programmes, and the increased role of women in the labour force. As a result of the decrease in fertility rate the period 1995 to 2000 is estimated to have a rate of natural growth of 18 percent and a projected growth rate of 17 percent (DANE, 2003a). The crude birth rate and crude mortality have also decreased and were estimated at 24 and 5.9 percent between 1990 and 1995 (DANE, 2003a). Life expectancy has increased from 61.6 in 1970-75 to an estimated 72.2 in the period 2000-2005 (UNDP, 2003).

The population pyramid has evolved from a wider base pyramid to a narrower one as a result of the changes described previously (Figures 1a and 1b). Two important factors characterize the evolution of the family in the second half of the twentieth century, and they are highly relevant to food security and nutrition. The first factor is a preponderance of urban zones as the preferred place of residence, leaving no place for subsistence agriculture or the production of food by the family unit and favouring lifestyles considered urban. The second factor is a constant decrease in the fertility rate which translates into fewer children per family.

FIGURE 1a
Population pyramid, 1951

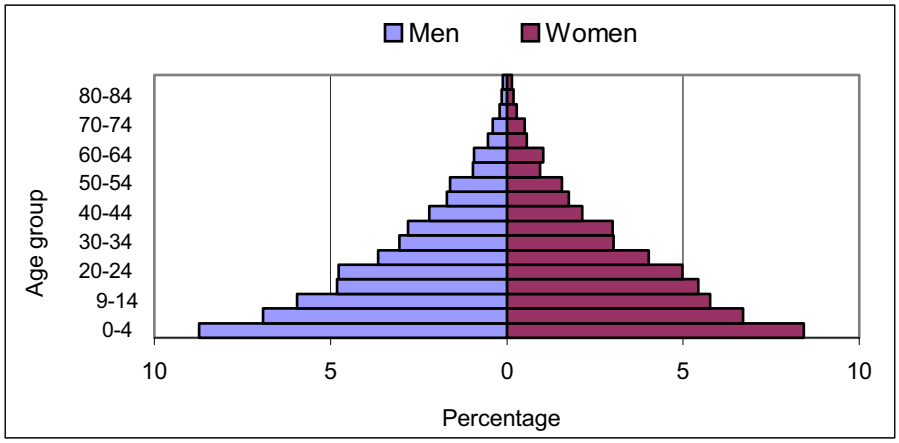
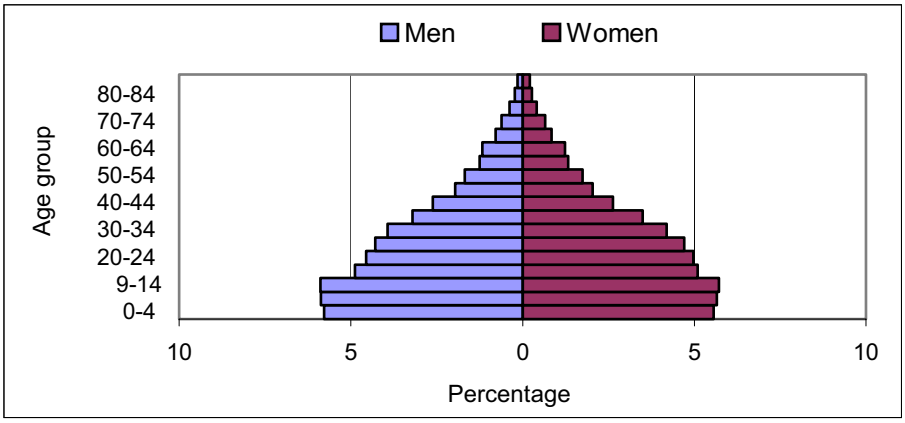


FIGURE 1b
Population pyramid, 1993



Source: DANE, 2003a.

Indicators of globalization

"Globalization is viewed as a reduction in barriers to the cross-border movement of goods, services and capital with accelerated integration of world markets and increased flow of commodities, technologies, information, financial capital, modes of distribution and marketing and, to an extent, migration of peoples and labour. A common feature of this process of globalization is a convergence, though at differing speeds, of many institutional, legal, economic, social and cultural practices and processes across different countries" (Shetty, 2003). This view of globalization expresses many of our own opinions on the subject, and some detail of how the process evolves will set the scenario for the discussion in this paper related to food and nutrition.

In 1990, a new government took office and immediately undertook the initiative of economic reform, market liberalization and democratization of the political system. Reforms were carried out by issuing new laws, constitutional changes and administrative decisions that soon resulted in a new set of rules for the economy. These changes marked a break with the traditional way of doing things and with old government institutions. The new government abandoned the old interventionist model preached by the Economic Commission for Latin America and the Caribbean (ECLAC) and created a new economic model characterized by economic opening, competition and greater opportunities for the citizens. During this process the National Department of Planning and the Ministry of Treasury shared objectives to design and implement neutral incentives between sectors and regions to help the government preserve a stable macroeconomic environment and provide incentives for technological change and increased competitiveness. Agriculture was included in the general strategy of institutional reforms. For this specific case, trade liberalization translated into elimination of traditional government intervention of control to imports, and guaranteed prices for main crops.

Communications, transportation and infrastructure

As illustrated in Table 2, telephone lines and other indicators of goods and services related to a better flow of communication and transportation flourished in the 1990s. Car ownership, evaluated as new cars per capita, also experienced a major increase in the period, although in the 1970s the number of cars increased fourfold (Dirección General de Transporte Terrestre Automotor, 2000). However, roads did not improve, with the percentage of paved roads remaining stagnant at 12 percent.

TABLE 2
Technology and infrastructure

	1997	2000	2001
Land lines and mobile telephones (per 1 000 people)	166.2	223.3	246.8
Personal computers (per 1 000 people)	30.3	35.4	42.1
Internet users	208 000	878 000	1.2 million
New cars per 1 000 people	4.74	1.6	1.7
Roads (km)	109 800	112 988	112 988
Paved roads (percentage of total)	12	12	12

Source: Dirección General de Transporte Terrestre Automotor, 2000.

ROLE OF GLOBALIZATION AND URBANIZATION ON DIETARY CHANGE AND LIFESTYLES

Evolution of the urban food supply

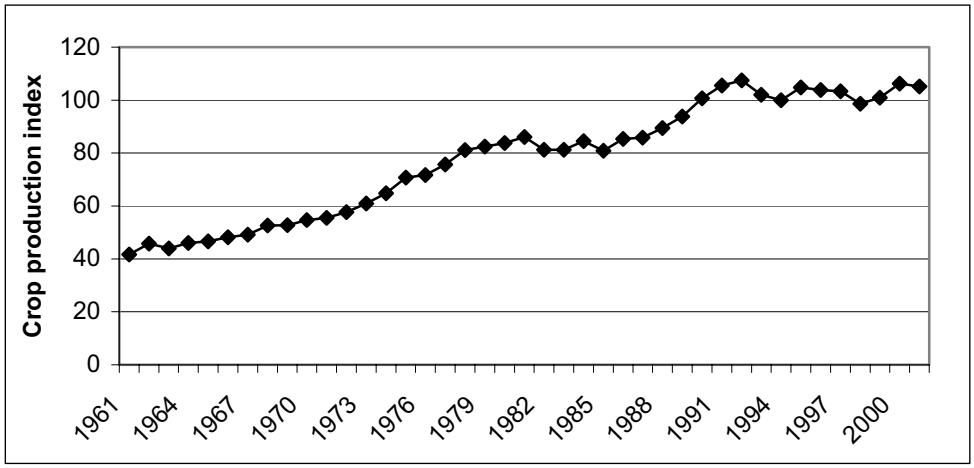
From the previous pages it is clear that Colombia has experienced both urbanization and many other features that characterize globalization, particularly since 1990. The paper will now focus on changes in the food supply and the impact of these changes on nutritional status. Changes in production and availability of food items that account for most of the calories available to the population, changes in ways foods are marketed, changes in food prices and changes in food preferences will be reviewed.

Changes in food production

The crop production index is used as a measure of agricultural production relative to a base period (1989-91). It includes all edible crops, but not fodder. Figure 2 shows a steady increase from the 1960s until 1990, when the index reaches a plateau. For the past ten years levels of crop production have remained stable.

From 1970 to 1990, the government assigned a central role for agriculture in the recovery of the country's economy and consolidation of development, trying to offer plentiful foods at low cost. The government wanted to modernize the agricultural sector and implemented incentives for private inversion in the sector, such as restructuring the prices for agricultural inputs, increasing prices to farmers and subordination of the import policies to protect national production. By 1988 the production policy was explicitly directed towards the achievement of food self-sufficiency (sovereignty), and food stocks to regulate the market forces. The plan was centred in a few food items important in the diet. These interventions of the government coupled with research and technology transfers (seeds, irrigation, credits, etc.) were associated with the sustained growth in productivity seen prior to globalization.

FIGURE 2
Crop production index[1] – World Development Indicators (WDI)



[1]The crop production index shows agricultural production for each year relative to the base period 1989-91. It includes all crops except fodder crops. The base period 1989-91 = 100: Food and Agriculture Organization of the United Nations, *Production Yearbook* and data files.
Source: World Bank, 2003.

Vegetable products

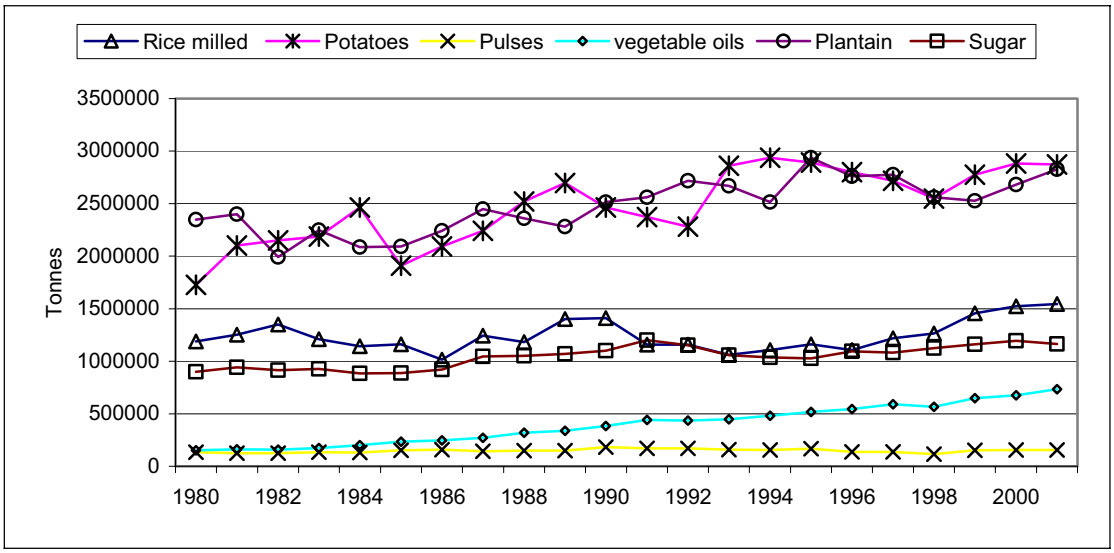
Staple food production

The main energy sources in the Colombian diet are potatoes, rice, plantains, pulses, sugar, oil and wheat (Figure 3). Most of these products are produced nationally, with the exception of wheat which is mainly imported. Before the 1990s there was a trend towards an increase in production of potatoes, plantains, sugar and vegetable oils. The production of pulses was low and has remained the same over the past 20 years. After 1990, there were no further gains in production of potatoes (growth for the decade 1.2 percent) or plantains, but refined sugar production increased by 3.6 percent[2] (Ministerio de Agricultura y Desarrollo Rural, 2003).

Although rice production initially decreased, it soon recovered and experienced substantial growth from 1990 to 2002. The production of vegetable oils has also maintained steady growth since 1990. Wheat production in the country has always been limited, although the population consumes 33 percent of dietary energy supply (DES) from wheat. In the 1970s imports more than doubled the maximum yearly production ever reached. Since 1990 wheat imports increased from 600 000 to nearly 1 200 000 tonnes in 1999.

[2] FAOSTAT (FAO, 2003) figures for 2001 production are 1 165 211 tonnes, while government figures for the same year are 2 241 59 tonnes.

FIGURE 3
Yearly production of basic foods (tonnes)



Source: FAO, 2003.

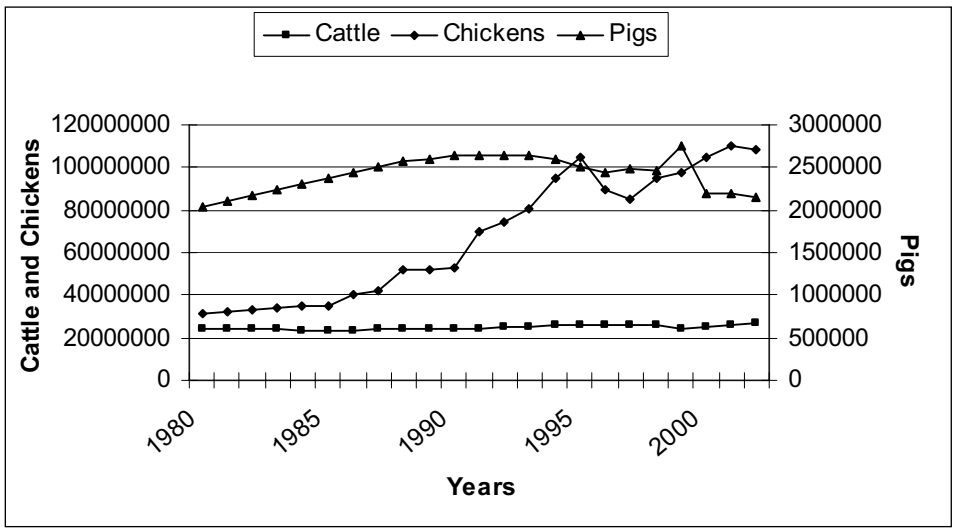
Panela is registered by FAOSTAT (FAO, 2003) as a special item and not centrifuged sugar. It is a commodity of social importance in the rural zone where it is estimated that 12 percent of the economically active population, some 350 000 rural people, work in activities related to panela. Culturally panela consumption has been linked to the rural way of life; hence, given the rural to urban migration and globalization, one might assume that its production would have declined, but in fact it has increased by 31 percent since 1990.

Livestock: beef, poultry, pork, milk and eggs

Beef, poultry, pork, milk and eggs constitute an important part of the modern Colombian diet, both in terms of nutritional value and as a share in the household food budget.

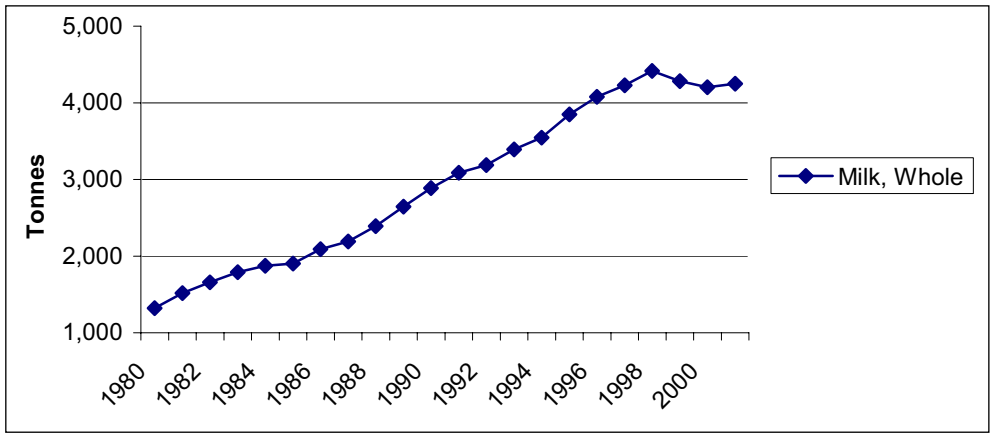
During the globalization period heads of cattle increased by 2.6 million animals, while the number of chickens went from 21 million to more than 110 million birds. Other authors estimate the production to be as much as 375 million birds (Kalmanovitz and López, 2003). Modernization of the poultry and pork industries is one of the more successful examples of decreases in trade barriers, resulting in improved availability of animal feed, which in turn made it possible to increase total production and availability for human consumption. Production of chicken meat increased from 172 973 tonnes in 1982 to 348 507 tonnes in 1990 and to 539 760 tonnes in 2001, a 54.8 percent increase during this period. Egg production also increased by 36 percent. From 1991 to 2001, per capita availability of eggs increased from 7.4 to 10.1 kg (Ministerio de Agricultura y Desarrollo Rural, 2002).

FIGURE 4
Livestock production, 1980-2000



Source: FAO, 2003.

FIGURE 5
Production of cow milk, whole



Source: FAO, 2003.

Within the category of animal source foods, milk, cheese and other milk products represent those with highest production and consumption volumes. Prior to 1990, the production of whole milk was growing at 8.2 percent, after which it slowed to 3.6 percent. The production of liquid milk increased from 2 million tonnes in 1980 to 5.8 million tonnes in 2001.

Production of key foods during the past ten years has been mixed. In general the rate of growth for production decreased, although the actual amount in tonnes was as high as in the previous decade. Wheat production almost halted and was replaced by ever increasing imports. Gains in poultry production provide a good example of increases resulting from changes in trade barriers and liberalization. The production of vegetable oils has also continued to grow.

Current role of imported foods and role of traditional foods

Globalization means liberalization of trade, therefore a massive importation of foods might have been expected. This is not the case for key food items such as potatoes, sugar, plantains, beef and liquid milk, where the percentage of imports in relation to production was minimal since the lifting of trade restrictions in 1990 (Table 3).

However, in terms of available energy, imported foods represented nearly 40 percent of total DES in 2000. Cereals and fats represent over 43 percent of DES. Dependency on imported energy sources is concentrated around wheat, vegetable oils and products for animal feed. Rice and powder milk are imported in relation to the gap in supply by local production. Domestic production of milk and cheese has steadily increased from 1993 to the present. Imports of these commodities peaked during 1996-1998 and have since declined (DANE, 2003b).

TABLE 3
Imported food as a percentage of availability (import [production + imports] 100)

Year	Potatoes	Plantains	Rice	Sugar	Wheat	Oil/margarine
1990	0.00	0.00			87.55	8.52
1991	0.01	0.00	0.02		87.25	10.65
1992	0.02	0.00	5.06		91.99	30.66
1993	0.13	0.00	3.17		89.85	44.44
1994	0.20	0.00	17.31		88.98	43.76
1995	0.43	0.78	8.08		93.04	40.16
1996	0.31	0.76	10.87		93.83	52.83
1997	1.02	0.37	12.25		95.32	52.68
1998	1.60	0.34	18.96	0.19	96.60	50.39
1999	0.91	0.07	2.58	0.48	96.35	45.43
2000	2.49	0.40	3.70	0.52	96.24	54.23
2001	1.28	2.11	9.18	2.49	97.84	57.31

Source: FAO, 2003.

The diversity of food items available, locally produced and imported

In terms of diversity of food items available, it is without doubt that globalization and urbanization have made it possible to expand the choice of foods. Large supermarkets linked to worldwide operations have made a variety of new foods available. For example, 12 different varieties of salami and sliced turkey cold cuts are available on supermarket shelves in Bogotá. However, the percentage of households actually shopping in the supermarkets and buying these new products is remarkably low, especially in the lower-income stratum.

We have no data yet on the quantitative effect on food habits from this avalanche of new products. Supermarkets in Colombia contain many of the same products to be found in any supermarket in a developed country. It is even possible to shop for food via the Internet.

From traditional open markets (*plazas de mercado*) to traditional neighbourhood stores, supermarkets and large transnational supermarkets

Marketing and purchase of foods are changing dramatically in larger cities. In the first half of the twentieth century food was bought at the *plazas de mercado*, open markets which were typically open once a week. As cities grew, *tiendas*, small family enterprises,

emerged on nearly every corner of the townships. Self-service markets and larger supermarkets were introduced in the 1970s and 1980s. In the 1990s the large national and transnational chains appeared on the supply side. Currently, there is a growing concern by the government to begin comprehensive planning for food supply in large cities, taking into account the physical aspects of food access and supply as well as the operational infrastructure.

Corabastos is the name of the largest wholesale market in Bogotá. It handles 6 700 tonnes of food daily, in an area of 420 000 m^2. There are 137 000 m^2 of storage area, 33 warehouses, nine banks, several automatic cash dispensers, cafés, bakeries, one public notary and cold storage facilities. The market is only 30 years old, but has become the largest wholesale centre in Colombia. It supplies food to 7 million people in Bogotá and the surroundings areas and is one of the places where prices are set for both farmers and consumers.

The importance of changes in the way foods are marketed can be assessed by comparing sales by different types of retail facilities. Sales of large supermarkets represent nearly 41 percent of sales in Colombia. (In Spain, sales by big stores represent 35 percent). By contrast, in Colombia 46.4 percent of the value of sales correspond to traditional stores, while this is only 10 percent in Spain.

TABLE 4
Percentage of total sales by size of facility in Colombia and Spain, 1998

	Colombia	Spain
Large supermarkets	20.5	34.8
1 000-2 499 m^2	20.8	14.5
400-999 m^2	8.3	17.8
100-399 m^2	4	22.9
Traditional stores	46.4	10

Source: España, 1999.

Although supermarket sales represented 20.5 percent of total sales, it was found that fewer than 7 percent of households purchase food in large supermarkets (Table 5). Traditional stores and small self-service markets continue to be the preferred places to shop for food. In other words, this aspect of globalization of the food system seems only to have reached the wealthy population with sufficient purchasing power.

TABLE 5
Percentage distribution of households buying foods by type of selling facility, 1999

City	Traditional stores	Small self-service markets	Large supermarkets	Cooperatives and similar
Bogotá	16.1	32.5	6.5	38.6
Medellín	46.6	30.5	0.6	9.1
Cali	31.9	42.1	1.8	3.7
Barranquilla	38.6	34.1	0.9	4.9

Source: España, 2000.

But not only small traditional stores and self-service markets survive. The open market – *plaza de mercado* – is still used by more than half of households to obtain their vegetables, meat and other perishable fresh foods. A study by España (2000) showed a correlation between city size and purchase of food in the open market. In smaller cities, 50-75 percent of the population bought produce in the open market, while in Bogotá, the largest city, only 30 percent of the population shopped there. Despite the presence of big transnational market chains, people continue to use the traditional stores and markets to buy essential foods. The role of these new actors in price formation and food habits needs to be further studied.

Importance of street foods and emergence of fast food chains

Eating outside the home is one of the major changes observed during the last decade. Factors such as distances within larger cities, women entering the workforce and government programmes giving food assistance to both preschool and school-age children, reinforce the pattern of eating at least some meals away from home. Decisions about what family members eat are now are in the hands of restaurants, fast food chains and catering services. The choice of foods on offer should be balanced by nutritional guidelines, although managerial and economic realities should also be considered.

With increasing numbers of people living in cities, city boundaries can either expand, or the fixed areas become more densely populated. In Bogotá and other Colombian cities both have happened. Bogotá and Medellín are the only cities with some sort of rapid transit system. For many workers, the time it would take to get home and back for a meal would be longer than the allocated work break. Equally important is the increasing amount of money needed for transport, reflecting the need to travel longer distances, and thus decreasing the money available to buy food.

While some workers and students bring food from home for their midday meals, this practice does not seem to be very extensive, but we do not have reliable data. Many children receive at least one meal in day care centres or school. With the vision to guarantee the rights of children, and alleviate the social effects of mothers leaving home to enter the workforce, the government has implemented one of the most successful child-feeding programmes. Both national and local branches of the government have implemented programmes to provide care and meals for children. In 2003 the Instituto Colombiano de Bienestar Familiar (ICBF) (Colombian Institute for Family Well-being) is expected to give assistance to over 2 500 000 children.

Over the past 20 years expenditure on food has decreased from 48.9 to 29.5 percent of the household budget. Expenditure on housing has remained relatively constant at 28-29 percent, while expenditure on transportation and communications, education and health has increased (DANE, no date). Table 6 shows food expenditure by location and household income level. The largest city in Colombia is Bogotá, followed by Cali, Medellín and Barranquilla with over one million residents, while Pereira has fewer than 500 000. Trends in lower consumption of cereals and increased expenditure on food eaten outside the home are relatively consistent with larger city size.

TABLE 6
Food expenditure by income levels, 1995-1999, percentage of food budget for each item

	National	Bogotá	Barranquilla	Cali	Medellín	Pereira
Low income						
Cereals	12.60	11.52	14.77	13.12	12.56	14.70
Tubers	7.76	8.14	6.20	6.51	7.36	7.51
Greens	7.54	7.70	6.50	7.93	8.14	7.42
Fruit	3.60	3.74	2.50	4.59	2.65	2.28
Meat	20.93	18.57	19.59	22.56	24.35	26.70
Fish	1.90	1.44	3.78	2.25	0.85	1.49
Milk products	16.50	16.92	17.65	13.85	19.85	16.96
Other	12.11	10.12	12.95	12.70	14.68	14.11
Food eaten outside the home	17.05	21.84	16.08	16.55	9.57	8.82
Middle income						
Cereals	10.50	9.50	11.98	11.60	10.51	11.61
Tubers	5.38	4.81	5.53	5.21	5.37	4.84
Greens	6.01	5.43	5.88	6.48	6.67	6.79
Fruit	4.50	4.54	2.84	5.40	3.92	4.73
Meat	20.99	18.14	22.11	22.56	24.83	25.69
Fish	2.16	1.84	4.24	2.38	1.25	1.68
Milk products	15.21	15.23	15.55	13.28	17.75	16.63
Other	11.11	9.47	11.60	11.26	14.09	12.43
Food eaten outside the home	24.13	31.03	20.28	21.85	15.62	15.60
High income						
Cereals	8.69	7.51	10.38	8.48	10.79	8.03
Tubers	3.34	2.67	3.82	3.27	3.61	3.26
Greens	4.96	3.72	6.75	5.88	5.99	5.24
Fruit	5.35	4.50	5.59	7.00	5.10	6.70
Meat	18.35	13.71	21.09	21.52	22.00	21.69
Fish	2.23	1.98	2.92	2.96	1.07	1.34
Milk products	13.52	12.71	15.67	12.73	15.65	13.32
Other	10.36	9.13	11.12	10.12	15.09	8.48
Food eaten outside the home	33.18	44.08	22.66	28.08	20.71	31.94

Source: DANE, no date.

From the data available, it is evident that there has been a major change in purchasing practices related to food, particularly the amount of money allocated to buying food to be consumed outside the home. We are beginning to assimilate the effects of these changes in the nutritional well-being of the population, in terms of habits, lifestyles, obesity and other specific nutritional disorders.

From home-prepared meals to mass services

Fast food chains, restaurants and catering services have replaced the dedication of mothers and families in the selection and preparation of foods. Practically in all socio-economic strata establishments can be found selling chicken, pizzas and hamburgers as a means to attract customers or encourage them to form new habits. Some facilities are quite unsanitary and have

poor food handling practices. New kinds of restaurants now exist to offer midday meals at low cost. They are located throughout the city and reflect the need of workers for a place to buy an inexpensive meal with a homely feel rather than a restaurant-type of meal.

Globalization and increased urbanization have been associated with important changes in the way foods are selected, bought and prepared. Nearly 30 percent of food budgets are devoted to buying food prepared outside the home. Instead of the housewife figure in charge of food selection and distribution, this role has been replaced by specialized organizations of food services and restaurants. Many informal family enterprises have used the sale of food as a way to increase their income; however, they have little or no technical expertise in safe food preparation for large numbers of people and economic considerations often outweigh those of nutrition and health.

PREVALENCE OF MALNUTRITION IN URBAN AREAS

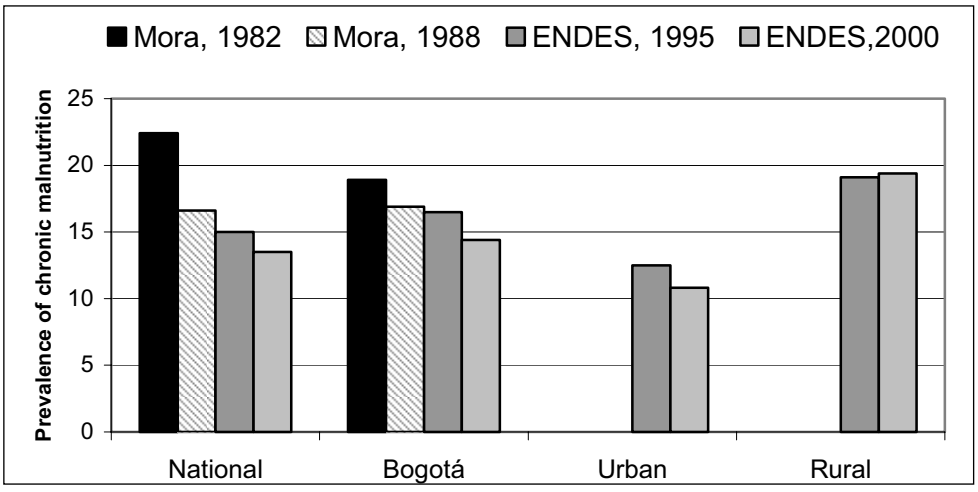
The prevalence of malnutrition in women of child-bearing age and children under five years of age decreased during the second half of the twentieth century. Malnutrition in children has also decreased, although there is no evidence of the influence of globalization in the process. However, urbanization is associated with less malnutrition in children.

Trends in children under five years of age

Figures 6 and 7 show the trends in rates of chronic and acute malnutrition in urban and rural areas and in Bogotá compared to the national average. Chronic malnutrition remains most prevalent in rural areas, but the prevalence of chronic malnutrition in Bogotá is higher than the urban average. Acute malnutrition in Colombia has decreased dramatically in the past 15 years, most probably as a result of improvements in food supply, food distribution and health care services.

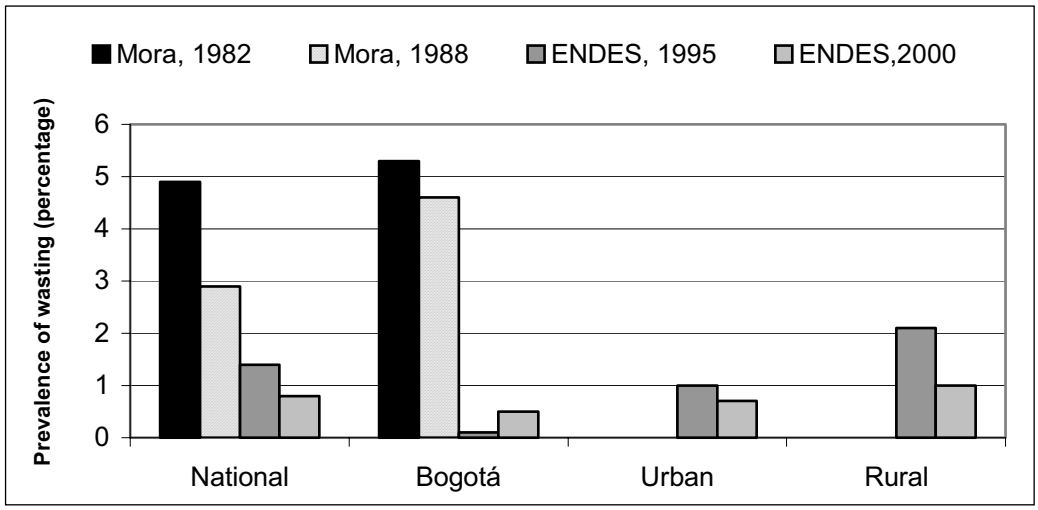
As might be expected, socio-economic differences do have an effect on the rate of malnutrition. In Bogotá the prevalence of acute malnutrition in children of low socio-economic status is five times greater than the total for Bogotá. The current prevalence of wasting in children of low socio-economic status living in Bogotá is similar to levels found in the 1970s.

FIGURE 6
Prevalence of chronic malnutrition in urban and rural areas, 1982-2000



Source: FAO,2001. The Mora and ENDES surveys used two different cut-off measures to determine the prevalence of malnutrition. The Mora studies used percentile cut-off of <3 while the ENDES studies use <-2Z scores.

FIGURE 7
Prevalence of acute malnutrition in urban and rural areas, 1982-2000



Source: FAO, 2001 The Mora and ENDES surveys used two different cut-off measures to determine the prevalence of malnutrition. The Mora studies used percentile cut-off of <3 while the ENDES studies use <-2Z scores.

TABLE 7
Prevalence of malnutrition in children of low socio-economic status

	1997	1998	1999	2000	2001	2002
Chronic malnutrition	15.5	14.9	15.1	16.1	14.7	15.3
Acute malnutrition	5.1	5.5	5.2	5.2	5.7	6.2

Source: Secretaría Distrital de Salud de Bogotá, 2003.

Trends in women of child-bearing age

Transition from the epidemiological point of view has been associated with the presence of both malnutrition and obesity. Unfortunately there are no national data on obesity among adults. However, data on women of child-bearing age show that overweight does exist. Table 8 shows data from the 1995 and 2000 national surveys, which found an overweight prevalence of over 40 percent in women of child-bearing age (BMI above 25). Women with no formal education or only primary school and women with a higher education had a similar prevalence of overweight.

TABLE 8
Nutritional status of women of child-bearing age

Sample	Mean BMI		Chronic energy deficiency (BMI <18.5)		Overweight (BMI >25)	
	1995	2000	1995	2000	1995	2000
National	24.5	24.7	3.8	3.2	40.3	40.7
Urban	24.5	24.7	3.8	3.2		40.8
Rural	24.5	24.6	3.9	3.1		40.5
Bogotá	24.4	24.7	1.5	1.7		39.1

Source: FAO, 2001.

TRENDS IN HEALTH STATUS IN THE URBAN ENVIRONMENT

Trends in health status

Since 1990, the health of the population in Bogotá has improved. The infant mortality rate decreased from 26.8 to 20 (Secretaría Distrital de Salud de Bogotá, 2000a) and infant mortality in 2000 was 33.8 in Cartagena, 19.5 in Ibagué and 17.4 in Medellín.

Infectious diseases

Colombia has improved its situation of infectious diseases especially for immunizable diseases. However, malaria, dengue and tuberculosis are still prevalent.

The programme for the prevention and control of AIDS and sexually transmitted diseases (STDs) reported 933 cases of AIDS in 1992 and 1 042 in 1996, with a cumulative total of 7 776 diagnosed cases and a cumulative mortality of 41.5 percent (3 226 cases). Of all the cases diagnosed, 85 percent were men; 40.5 percent of those were in the group aged 25 to 34. Only 2.1 percent of the cases affected the population under 15 years of age. Heterosexual transmission accounted for 44.0 percent of the cases and homosexual transmission for 27.4 percent. The highest percentages of diagnosed cases were in Bogotá (46.4 percent) and the district of Antioquia (15 percent). In 2002 the number of new cases was 933 (Pan American Health Organization, 2002).

Chronic non-communicable diseases (NCDs)

Cardiovascular diseases are the leading cause of death in women, the second leading cause in men, and the primary cause of death in the group aged 45 to 64. In 1994, 44 percent of deaths attributed to this cause were a result of ischemic heart disease – 93 percent of them were persons aged 45 and older, and 56 percent were men. Cerebrovascular diseases represented 28 percent of deaths from cardiovascular conditions, 91 percent of which occurred in the over-45 age group and 54 percent in women.

Arterial hypertension is the most important risk factor for cardiovascular diseases. According to the 1987 national health study, the prevalence of arterial hypertension in Colombia was 11.6 percent in the population over 15 years of age. However, a study conducted in 1995 among the population of Quibdó revealed a prevalence of 35 percent in all persons over the age of 18 and a prevalence of 39 percent in the Colombian population of African ancestry – percentages significantly higher than those observed in the rest of the population (21 percent). The prevalence rates varied by age, from 10 percent in young persons to 50 percent in those aged 49 and over. No differences were noted according to sex. Only 16 percent of the persons surveyed said that they participated in some form of exercise in their free time. Somatometry showed that 50 percent were at least 10 percent overweight. A comparison between BMI means showed that hypertensive individuals were more obese than those who were not hypertensive ($P<0.0001$) (Pan American Health Organization, 2002). Diabetes incidence has also increased by 30 percent (Table 9).

TABLE 9
Incidence of diabetes and hypertension in Bogotá, 1987-1998

	Cases		Rate per 10 000	
Year	Diabetes	HTN[1]	Diabetes	HTN[1]
1987	392	693	0.92	1.63
1988	433	699	0.9	1.45
1989	490	826	1.02	1.72
1990	525	813	1.06	1.65
1991	517	854	1.01	1.67
1992	582	873	1.11	1.67
1993	600	934	1.1	1.72
1994	635	938	1.14	1.69
1995	700	899	1.23	1.58
1996	620	946	1.07	1.63
1997	823	833	1.39	1.49
1998	829	781	1.37	1.29

HTN = hypertension.
Source: Secretaría Distrital de Salud de Bogotá, 2000a.

The rate of incidence of type-2 diabetes in Bogotá increased, reaching a level 30 percent higher than previously, perhaps reflecting the changes in increasing sedentary behaviour, coupled with changing dietary habits (Table 9). Colombia represents a typical transition country, with continuing problems from infectious diseases such as malaria and tuberculosis, and increasing prevalence of NCDs such as cardiovascular diseases and diabetes.

PROGRAMMES TO ADDRESS FOOD AND NUTRITION ISSUES

There are two types of programme being carried out by the government in order to address the effects emerging in the globalization/urbanization period.

As mentioned before, food assistance is given to nearly 2 500 000 children, both at school and in special day care centres. The focus is on children belonging to families of the lower socio-economic strata. Equally, pregnant and lactating women of the same socio-economic strata receive some food assistance.

On the other hand, the government is also starting to implement programmes aimed at creating healthier lifestyles – promoting nutritional guides, schools and regular exercise. Most of these programmes are new or are functioning at the pilot level.

Bibliography

Departamento Administrativo Nacional de Estadística (DANE). 1967. *XIII Censo Nacional de Población y II de Vivienda. 1964. Resumen Nacional. Manual de Empadronador.* Bogotá, DANE.
Departamento Administrativo Nacional de Estadística (DANE). 1980. *XIV Censo Nacional de Población y III de Vivienda. 1973. Resumen Nacional.* Bogotá, DANE.
Departamento Administrativo Nacional de Estadística (DANE). 1986. *XV Censo Nacional de Población y IV de Vivienda. 1985. Características Económicas. Vol. IV. Metodología. Vol. II*. Bogotá, DANE.
Departamento Administrativo Nacional de Estadística (DANE). 1996. *XVI Censo Nacional de Población y V de Vivienda. 1993. Resumen Nacional. Manual de Empadronador.* Bogotá, DANE.
Departamento Administrativo Nacional de Estadística (DANE). 2003a. *Población Total Censada en 1993, 1985, 1973 y 1964 por Sexo, según Grupos de Edad. Total Nacional* (www.dane.gov.co).
Departamento Administrativo Nacional de Estadística (DANE). 2003b. *Encuesta Anual Manufacturera 2001.* CIIU Rev. 3 A.C (www.dane.gov.co).
Departamento Administrativo Nacional de Estadística (DANE). 2003c. *Colombia: indicadores demográficos. 1985-2015* (www.dane.gov.co).
Departamento Administrativo Nacional de Estadística (DANE). *Encuesta Nacional de Ingresos y Gastos 1994-1995. Gasto Total Mensual Por Artículo, Total Nacional y Por Ciudad, Según Deciles de Ingreso de Hogares.*
Dirección General de Transporte Terrestre Automotor. Subdirección Operativa de Transporte Automotor Grupo de Estudios de Carga. 2000. Parque Automotor de Transporte de Carga en Colombia. Bogotá (www.mintransporte.gov.co/Servicios/Biblioteca/documentos/PDF/Analisis_Parque_Automotor.pdf).
España, R. 1999. *El presente y futuro del comercio.* Federación Nacional de Comerciantes Fenalco Congreso "Góndola". Bogotá (fenalco.com.co/fenalco/frames.asp).
España, R. 2000. *El cambiante entorno del retail en Colombia.* Federación Nacional de Comerciantes Fenalco Congreso "Góndola". Bogotá (fenalco.com.co/fenalco/frames.asp).
FAO. 2001. *Nutrition country profile, Colombia* (www.fao.org/es/ESN/nutrition/col-s.stm).
FAO. 2003. FAOSTAT (www.fao.org).
Kalmanovitz, S. & López, E. 2003. *La agricultura en Colombia entre 1950 y 2001* (banrep.org/junta/trabajo4-kalmanovitz.htm).
Martínez, H., Acevedo, X. 2003. Características y estructura de la cadena agroindustrial de la panela en Colombia. Ministerio de Agricultura y Desarrollo Rural (www.agrocadenas.gov.co/home.htm).
Ministerio de Agricultura y Desarrollo Rural. 2002. *Anuario Estadístico del Sector Agropecuario 2001.*
Ministerio de Agricultura y Desarrollo Rural. 2003. Producción Agrícola por Cultivos (www.agrocadenas.gov.co/home.htm).
Ministerio de Protección Social. 2002. *Indicadores de salud vigilancia epidemiológica* – Ministerio de Salud. 2002 (www.minproteccionsocial.gov.co/MseContent/newsdetail).
Ojeda, G., Ordóñez, M. & Ochoa, L.H. 2000. *Salud sexual y reproductiva. Colombia: resultados de la Encuesta de Demografía y Salud.*
Pan American Health Organization. 2002. *Country profile.* PAHO (www.paho.org/English/DD/AIS/cp_170.htm).
Secretaría Distrital de Salud de Bogotá. 2000a. *Diagnóstico Distrital de Salud.*
Secretaría Distrital de Salud de Bogotá. 2000b. *Registros de defunción, área de análisis y políticas en salud pública.*
Secretaría Distrital de Salud de Bogotá. 2003. *Programa de Vigilancia Nutricional.* Bogotá, 31 June.
Shetty, P. 2003. *Impact of globalization on food and agriculture from the farm to the plate.* Presented at Impacts of Globalization on Agricultural Production and Marketing with Focus on Food Quality, 22-24 January, Tokyo.
United Nations Development Programme (UNDP). 2003. *Human Development Report 2003* (www.undp.org/hdr2003/).
United Nations Population Division. 2002. *World Urbanization Prospects*: *the 2001 Revision.*
World Bank. 2003. World Development Indicators (WDI) database.

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