

NUTRITION IN LARGE URBAN CENTRES OF BRAZIL: SOUTHEAST REGION

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SUMMARY The interest in the evaluation of the nutritional status of the population and the quality of food in large cities has been steadily growing in Brazil. The Brazilian population is rapidly urbanising. Recent demographic data show that 70% of the Brazilian population live in cities and that the State of Sao Paulo is more than 90% urban, with dense concentrations. The city of Sao Paulo has about 10 million inhabitants. Other cities in this region have up to 1 million residents. This growing urbanisation produces serious food and nutrition problems linked to changes in dietary habits and social conditions. Nutritional problems related to lack of proteins, calories, vitamins and minerals along with excessive consumption of alcohol, and at the same time obesity have been detected in these populations. Food storage, hygienic food preservation, and adequate industrial processing are among the additional problems affecting the nutrition of the population in large cities. Changes in traditional habits such as breast feeding are occurring in these settings. The prevalence of nutritional diseases such as protein energy malnutrition, iron deficiency (with or without anaemia), and vitamin A and zinc deficiency have been studied in the cities of Sao Paulo and Ribeirão Preto. At the same time, the increasing prevalence of diseases of affluence such as cardiovascular disorders and obesity, along with alcoholism, are of great concern to experts working in nutritional sciences.

KEYS WORDS: Metropolisation, Urbanisation, Micronutrients, Protein, Energy, Obesity, Sao Paulo.

INTRODUCTION

In developing countries, urban areas are rapidly growing in terms of their importance, extension and population. The United Nations published a review entitled "Patterns of Urban and Rural Population Growth" (1980) which noted that the urban population of the less developed countries was around 440 million in 1960, 970 million in 1980 and would reach 2.6 billion in the year 2000. The more urbanised regions in developing countries of Latin America have a level of urbanisation estimated at 65% in 1980, followed by Asia with 30% and Africa

with 29% (1). An example of this growth is Sao Paulo which at the turn of this century had 240 thousand inhabitants, reached 580 thousand by 1920, 1.3 million by 1940, 2.2 million by 1950, 3.6 million by 1960, 5.9 million by 1970, 8.5 million by 1980 and today has a population of 9.7 million. Considering 1900 as a reference year, its growth has been 40 fold. The city of New York only grew 2.5 times during the same period (2).

Recent demographic data show that 70% of the Brazilian population live in cities and that the State of Sao Paulo is more than 90% urban as a consequence of rural-to-urban migration. The migratory flux flows from the rural areas and small towns to large urban centres. The factors involved are mostly socio-economic in nature, such as the expectation of a better chance of employment, higher wages, improved standards of living, education and recreation. Huge increases in population occur most frequently in slums in the outskirts of large cities, although a contrary trend was recently detected, with large groups of people leaving our densely populated areas.

In fact, in Brazil, one clearly observes the phenomenon designated "metropolisation", i.e., an accelerated expansion of the periphery of the large metropolitan regions. In the past 11 years, the annual growth rate of this peripheral population has been higher than that of the inner city. Metropolisation is occurring in Sao Paulo, Rio de Janeiro and Belo Horizonte (Southern Region) as well as in other capitals. In Sao Paulo, for example, the annual growth rate is 1%, whereas the rate for the surrounding areas is 3% (IBGE-Census 91). Around 2.7 million people live in slums ("favelas") which have sprung up around the periphery.

The consequences of metropolisation are: deterioration of the urban infrastructure, increased social tension, crime, and a worsening of nutritional and sanitary conditions.

In 1985 the infant mortality rate (deaths of children under 1 year of age for every 1000 live births) decreased to 36.0 in the City of Sao Paulo. However, the rate was not consistent through-

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out the region: for example in 1983 this rate was 42.6 in the center of Sao Paulo and 69.2 in the surrounding areas (3). Recent studies in the Municipality of Sao Paulo have shown that the elderly living in the outskirts are less privileged in terms of environmental surroundings, cultural patterns and economic situation. This study showed that the aged population consisted primarily of females (60%) who had migrated from rural areas (57%). In the central area 27% had a per capita income of more than US\$ 250 per month. In the peripheral areas, 47% were illiterate, 56% had a monthly income below US\$ 50 and 32% had mental disturbances, the latter rate being higher than in the central area (4).

Recent Brazilian studies have compared the prevalence of undernutrition among under-five-year-olds in 1974-75 with that of 1989. There was a significant decline in this prevalence, showing a 33% reduction in all forms of undernutrition and a 67% decline for the moderate and severe forms (5). These data, however, show an extremely heterogeneous distribution, with great contrasts among the various Brazilian urban regions. The Southern Region presents anthropometric indicators comparable to those of countries such as Chile and Costa Rica, considered to have good levels of health and good patterns of nutrition (6).

Despite the progress in the Southeast, other reports have demonstrated the prevalence of other types of nutritional disorders in the area, such as chronic non-infectious diseases related to nutrition.

Previously, the main focus of intervention programmes has been the correction of disorders related to protein energy malnutrition; now other forms of malnutrition are requiring attention.

Thus, in the Municipality of Sao Paulo in 1984/85, 53.7% of children under 2 years from a low socioeconomic stratum showed nutritional anaemia, half of them with severe anaemia (cutoff: Hb < 9.5 g/dl). These figures represent double the prevalence found in a study undertaken 7 years earlier in the same municipality (7,8).

High prevalences of nutritional anaemia have been found in other cities of the Southern Region of Brazil; for example, 38.3% of children between 6 and 12 months of age in the central part of Ribeirao Preto and 58.2% of children under 2 years in the outskirts of the same city were anaemic (9,10).

Other deficiencies have also been described in this economically developed city of Ribeirao Preto. Low circulating levels of zinc were found in children from 2 to 7 years of age from low socio-economic groups living in peripheral settlements. The plasma zinc levels were below 70 ug/dl in 13% of the children studied (11). Similar findings were detected in Rio de Janeiro (12).

Estimates of a recent household-level survey (1989) in the

Southern Region have shown that approximately 6 million persons > 18 years of age had low body-weight. This was the worst figure, in absolute terms, for any region in Brazil (13). In the Southern Region the rural population showed the greatest prevalence of low weight when rural and urban populations were compared (Table 1).

TABLE 1
ESTIMATED PREVALENCE (%) OF LOW WEIGHT
IN THE RURAL AND URBAN POPULATION
OF THE SOUTHEAST REGION

Sex	Urban Sector		Rural Sector	
	%	Estimated population	%	Estimated population
Men	14,25	2.311.165	21,46	588.191
Women	13,75	2.403.778	17,20	406.205

Economic factors certainly influence dietary patterns, particularly in the urban areas. Mello-Amorozo and Srimpton (14), in 1984, suggested that income was a factor for 30 to 60% of the population of Manaus, a large urban center in the Amazon region. These factors, once again, can be seen in the Southern Region when one considers the various income levels; the prevalence of low weight decreases with increasing monthly per capita family income (13).

Expenditure on food consumes one-half to one-third of the household budget of the low-income population of Latin America (15). In 1980, Ward and Amano (16) reported that poor migrants in Brazil were not efficient in their selection of diet; for the same income, they could have bought relatively better quality foods.

We recognise a certain overall relationship between income, expenditure on food and eating patterns. An increase in income almost always results in an increased purchase of foods in absolute terms but, after reaching a certain minimum level, the percentage of the household budget allotted to food tapers off.

The nutritional problems related to rapid urbanisation certainly exert an important influence on food intake for urban residents, particularly those with low purchasing power (17).

Thus, recent published data of the PNSN (Health and Nutrition National Survey) have shown that the influence of income on nutrition is more evident when the per capita incomes are tracked from a 0.5 minimum-wage household in-

come to a 2.0 minimum-wage, both for men and women. Across this income gap in rural populations, there was a decrease in the prevalence of low-weight in adults. Among adults in the urban areas, these changes did not imply a modification in low weight prevalences (13). Mechanisms of subsistence such as production of food, a practice very common in rural areas, may possibly explain this difference. Furthermore, obtaining food is much more dependent on the level of family income in urban settings and the urban cost of living is made up of expenditures on housing, transportation, etc.

Studies have shown a large variety of foods, and possibly foods of better quality consumed by residents of the urban zone. The urban diet, in opposition to the rural diet, tends to incorporate foods such as meat, fish, poultry, eggs, milk and dairy products, and fruits and vegetables in large amounts (18).

Another aspect to be considered is physical activity which is considerably less in the cities than in rural areas (17). In addition, the new residents of the urban zone tend to utilise processed, industrialised foods, i.e., "snack foods" (rich in sugar, salt and fat) (19,20). These considerations may explain the higher prevalence of "low" body mass indices in rural than in urban areas.

On the other hand, there is a high prevalence of obesity in urban centres.

With respect to obesity (defined as a BMI > 30) among adults, it was estimated there are 3,698,605 adults with this condition in the Southern Region. Of all the people thus classified, 70% are females. These values represent a high prevalence of obesity among women (12.6%), with men having only a 3.8% frequency of this condition (Table 2). The overall frequency of obesity found among school children in Ribeirao Preto - SP is as high as that seen in developed countries, but it is directly related to socioeconomic status (Table 3) (20).

The rate of obesity among adults increases progressively

TABLE 2
ESTIMATED PREVALENCE (%) OF OBESITY IN THE
RURAL AND URBAN POPULATION OF THE
SOUTHEAST REGION, 1989.

Sex	Urban Sector		Rural Sector	
	%	Estimated population	%	Estimated population
Men	6,11	990.829	1,53	42.088
Women	13,71	2,395.828	11,43	269.860

TABLE 3
PREVALENCE OF OBESITY IN SECONDARY SCHOOL
CHILDREN ACCORDING TO SOCIO-ECONOMIC
CLASS AND SEX. RIBEIRAO PRETO -SP

Socio-economic Class	Percentages		
	M	F	Total
Upper	35,8	42,4	38,0
Middle	17,0	7,5	12,0
Low	2,3	5,3	4,0

with age, from 45 years onward in women and between 45 and 64 years in men. In urban areas, around 67% of all obese women are over 45 years of age; in this age-group, the prevalence of obesity is 22.7%. For men, the peak prevalence of obesity (10.2%) was found in the age-range of 55 to 64 years.

When analysing the relation between obesity and income, a general trend is observed: the higher the income the higher the prevalence, with the exception of women living in the urban area, who show a mild decline in obesity with higher incomes. Obesity is more frequently seen among urban men, with a prevalence of 6.1%, as compared with rural men, with a rate of 1.5%. Among women, the urban-rural difference disappears, with prevalences of 13.7 and 11.4% in the respective regions (13). The high prevalence of obesity is a matter of concern due to its association with morbidity and mortality.

Tentative explanations for the gain in body weight and the prevalence of obesity in Brazil, especially among women, may be related to food intake and physical activity.

Data presented by the DIEESE (Intersyndical Department of Economic Studies) from studies monitoring the price of the subsistence food basket in Sao Paulo do not confirm the possibility of an overall increase in food consumption. The "Household Budget Survey" (POF - FIBGE, 1989), conducted in 1987/88 in nine different metropolitan areas of Brazil, permitted a comparison of food intake over a 15-year period. These data show a decline of about 8% in food expenditures over the period of 1974 to 1989. They also show a larger consumption of soybean oil.

According to Coitinho and coworkers (13), there has been an increase in energy intake in certain subgroups of the population. It is possible that this increase in energy was provided by a supply of foostuffs at work, such as those offered by the Food for Workers Govt. Programs. Food supplement programmes for pregnant women and young children and a reduction in family

size probably increased the availability of food or its differential redistribution for adult consumption. An additional possibility is an alteration of dietary composition with the substitution of expensive foods (meat, eggs, butter, fruits and vegetables) by "cheap calories" such as rice, oil and manioc flour along with a possible increase in the consumption of alcoholic beverages.

It is probable that changes in life style result in less physical activity, both in terms of work and recreation. Our way of life is becoming ever more sedentary, with clear consequences in body composition; the extreme effects of this process are the weight gains observed in the poorest classes (20). A hereditary influence may also be proposed as an additional explanation.

The creation of a Brazilian Programme of Food Production, Storage and Consumption, is proposed in order to secure food for everyone. It is necessary to satisfy the priority needs of the highest-risk segments by ample supplementation with basic foodstuffs. It is also fundamental that food availability be increased in a long-term programme.

A more efficient commercialisation of food could lead to a reduction in price, reducing the number of intermediaries between producer and consumer. The City Hall of the Municipality of Sao Paulo has organized "fairs" in neighborhoods with populations of lower economic level, selling foods at reduced prices. Another option frequently brought to mind is the reduction of prices of basic foods for the consumer by way of a government subsidy system but this causes the agricultural sector to lose interest in production. Finally, it has been proposed that intervention programmes take into consideration not only issues of protein and energy nutrition but also those of micronutrient imbalances.

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