**Brazil: Nutrition Landscape**

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**Abstract**

Economic and social improvements in Brazil have led to improved nutritional status overall, but not all of the improvements have been seen equally among all regions and groups. Rates of underweight and stunting are down, but obesity is starting to become an issue, especially among women, and urban populations.Vitamin A and iodine deficiency have also been found in segments of the population. Special attention needs to be paid to at-risk groups in rural areas of the northeast and urban areas in Rio de Janeiro and Sao Paulo to promote and protect the nutritional well-being of the Brazilian population.

According to the WHO, there were 200,362,000 people living in Brazil in 2013.1

Of these 200 million people, 11% are over the age of 60, and 24% are under the age of 15. The median age is 30 and 85% of the population lives in urban areas1.

The primary language spoken in Brazil is Portuguese, however Spanish, and several Amerindian languages are also spoken.2 It is estimated that in 2010, the population was 48% white, 8% Black, 43% Pardo, 1.1% Asian and .4% indigenous.A,2 In terms of health disparities, the 1998 National Household survey (PNAD) found no difference in self-assessed health status between Brazilians of different races, after controlling for education and income. 3 However, data for infant mortality, and quality of care suggest worse outcomes for Blacks and Pardos living in Brazil.3

The southeastern region of Brazil is where much of the economic activities and industry are situated, and includes the Brazil’s two largest cities of São Paulo, and Rio de Janeiro. The southern region is also highly developed. The west central region is sparsely populated, but does contain the nation’s capital, Brasilia, and several reservations for native Indian tribes. The northern region includes much of the Amazon rainforest and is undergoing conservation efforts which discourage farming and industry. The northeast region contains about 30% of the population. Although the land is not suitable for farming due to frequent droughts, the land may be a rich source of oil. 4 The northeastern region is of particular concern because it has the lowest income, the highest rate of illiteracy among those older than 15 years, and the highest rate of infant mortality.5 This region includes 9 states – Maranhão, Piauí, Ceará, Rio Grande do Norte, Paraíba, Pernambuco, Alaggas Sergipe, and Bahia.

Historically, stunting has been a major issue for Brazil.D In 1987, the prevalence of stunting was 27% in the northeast region of Brazil.6 Since then, improvements such as universal healthcare, increased educational attainment and increased purchasing power in low-income families has contributed to decreased rates of stunting.7 In 2007, the prevalence of stunting in the northeast region was estimated at 13%. The overall rate of change for stunting was -6.7% for the entire country, indicating steady improvement between 1986 - 1996.6,8 Brazil has been especially successful in narrowing the gap between the lowest and highest income families in terms of stunting.8 (See Table 1.1)

The number of undernourished individuals is also decreasing.9 The rates of wasting in children under 5 years decreased from 5% in 1975 to 2% in 1989 and 1996.F,10 The rates of underweight in children under 5 years decreased from 18% in 1975 to 7% in 1989 to 6% in 1996.E,10 Rural populations were more at risk of underweight at 9% compared to urban populations at 5%.10 In particular, the northeastern states that have not shown as much rapid improvement in rates of underweight with 8.3% of children under 5 experiencing underweight and 17.9% experiencing stunting in 1996.10 (See Table 1.1)

As Brazil becomes more westernized there is also a concern that sub-groups of the population may be more susceptible to being underweight due to a different etiology - eating disorders. In particular women, ages 20-29, smokers, those with increase schooling and those without a partner are more susceptible to eating disorders.11

The major issue facing the country as under-nutrition becomes less of a problem is obesity.C,9 As economic development has improved and more people move to urban areas, there is increasing access to junk food and fast food and decreased access to fresh fruits and vegetables.12 The high-fat, high sugar, processed foods available in urban areas may be responsible for increased rates of overweight, obesity and chronic disease.13 Certain sub-groups of the population are particularly vulnerable to becoming obese. In 2009, 1 in 6 men were obese and 1 in 8 women were obese.14 Although obesity disproportionately impacts women, obesity rates decreased as income and educational attainment improved for women. 12,14 (See Table 1.0 & 1.3)

In countries undergoing the nutrition transition, it is common for the adults to be the first age group to become obese followed by the oldest children, and then the youngest children. One study showed that between 1996 and 2006, there was an increase in obesity among children ages 6 to 11, but not in the children younger than 5.14 If Brazil follows the trends of other countries undergoing this transition and does not intervene, it is only a matter of time before the youngest children are also affected by higher rates of obesity.14 (See Table 1.1)

Currently, Brazil does not have any national programs to provide vitamin A to children under 5, post-partum mothers or through fortified foods, however, subnational programs have been ongoing in the northeast region.15,16 In 1976, a one-year study of pre-school age children in the Northeastern region identified approximately 1000 children who suffered from blindness due to vitamin A deficiency (VAD), and many more with reversible symptoms of VAD.G,17 Since then, the government has fortified sugar with vitamin A, which is consumed frequently by infants and young children in tea and coffee as well as a gruel made of cassava.17

A study published in 2014 in the northeastern state of Pernambuco associated the 16% prevalence of vitamin A deficiency in children under 5 with inappropriate garbage disposal and diarrhea within the last 2 weeks.18 Therefore, overall improvement in nutritional and health status that leads to reduction in diarrhea may also improve vitamin A status.19 Other risk factors for vitamin A deficiency include living in an urban area, mothers older than 25 years old and no consumption of animal meat in the past 7 days.20 More attention may need to be paid to urban centers in the south. In 1998, the southeastern city of Rio de Janeiro, an analysis of serum retinol showed that 56% of newborns and 14% of pregnant women were vitamin A deficient.10

Anemia is also a concern in certain populations and regions. Among children under 5 in the northeast region of Brazil, anemia was found in 48% in 1992 and 40.9% in 1997. 5,10 Data from 1997 indicated higher rates of anemia in children ages 6-23 months compared to the 24-59 month old group, and increased prevalence of anemia in rural areas compared to urban areas.5 Since then, studies in the northeastern state of Pernambuco have found a 35% prevalence rate of anemia among children under 5 in 2006.5,18 Although the anemia prevalence shows improvement over time, anemia is clearly a more significant problem in the northeastern region, compared to a 21.8% country-wide rate of anemia in children under 5 in 2006. (See Table 1.2)

There is no evidence to suggest that Brazil meets the WHO criteria for iodine deficiency. 21 A study in 2001 of 21 villages in 8 different states indicated that the prevalence of goiter was low and the consumption of iodine was adequate, based on urinary iodine excretion, thyroid volume and levels of salt iodization.22 According to UNICEF, 95.7% of all salt consumed in Brazil was appropriately iodized in 2012.23

However, there are still at-risk populations that require continued monitoring. In 1995 a study found that the western state of Mato Grosso and the northern state of Roraima had a 20% prevalence of iodine deficiency.10 In 2008, schoolchildren ages 6-14 in the western state of Minas Gerais were found to have a 38.9% prevalence of iodine deficiency, of which 10.2% were moderately or seriously deficient.21 Continued monitoring is important in these at-risk populations where iodine in the soil or access to iodized salt may be low.

In conclusion, although Brazil has made a lot of progress in terms of the nutritional status of its citizens, there is still a lot of work to be done, especially in certain key populations.

**Definitions**

A Pardo (or Moreno): in Brazil, someone of mixed-race ancestry, literally meaning “brown or “grey”; often includes indigenous populations 3

B Overweight: in adults, BMI 25-29.9 kg/m2; in children, weight-for age > +2 SD10

C Obesity: in adults, BMI > 30 kg/m2 10

D Stunting: height-for-age < -2 SD10, in children

E Underweight: in adults, BMI < 18.5; in children, weight-for-age < -2 SD10

F Wasting: weight-for-age < -2 SD10, in children10

G Vitamin A deficiency: retinol levels below 0.70 μg/dL.20

**Tables & Figures**

Table 1.0

Prevalence of Underweight, Overweight, and Obesity in Brazil in adult women

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Survey | Region | Sample Size | Gender | Age | Underweight  %BMI | Overweight  %BMI | Obesity  %BMI |
| <18.5 | 25-29.9 | >30 |
| BEMFAM 1997 | National | 2951 | F | 15-49 | 6.3% |  |  |
| DHS 1996 | Urban | 2325 | F | 15-49 | 5.8% | 18.8% | 6.9% |
|  | Rural | 626 | F | 15-49 | 7.8% | 20.4% | 7.9% |
|  | Northeast | 927 | F | 15-49 | 7.7% | 15.4% | 4.8% |
|  | Northeast urban |  | F | 15-49 | 6.3% |  |  |
|  | Northeast rural |  | F | 15-49 | 8.8% |  |  |
|  | Centersouth |  | F | 15-49 | 5.8% |  |  |
|  | Centersouth urban |  | F | 15-49 | 5.8% |  |  |
|  | Centersouth rural |  | F | 15-49 | 6.1% |  |  |
|  | Rio de Janeiro | 258 | F | 15-49 | 8.8% |  |  |
|  | Sao Paulo | 588 | F | 15-49 | 6.4% |  |  |
| BEMFAM 1997 |  |  |  |  |  |  |  |
| PNSN 1989 | National | 17168 | F | >18 | 5.8% | 26.6% | 11.8% |
|  | Urban | 9325 | F | >18 | 4.8% | 27.9% | 12.6% |
|  | Rural | 6565 | F | >18 | 8.6% | 21.6% | 8.8% |
|  | Northeast |  | F | >18 | 8.4% |  | 8.9% |
|  | Northeast urban | 1850 | F | >18 | 5.2% | 25.4% | 4.3% |
|  | Northeast rural | 1937 | F | >18 | 12.2% | 17.1% |  |
|  | Centersouth |  | F | >18 | 4.7% |  | 14.3% |
|  | Centersouth urban | 1742 | F | >18 | 4.6% |  |  |
|  | Centersouth rural | 1823 | F | >18 | 5.1% |  |  |

Source: FAO10

Table 1.1

Prevalence of Underweight, Overweight, Wasting and Stunting in Brazil in children less than 5 years old according to the 1996 DHS Survey

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Location | Sample Size | Sample Gender | UnderweightE | StuntingD | WastingF | OverweightB |
| National | 1926 | M | 5.9% | 11.5% | 2.3% | 4.7% |
| National | 1890 | F | 5.4% | 9.4% | 2.4% | 5.1% |
| Urban | 2903 | M/F | 4.6% | 7.8% | 2.3% | 5.0% |
| Rural | 912 | M/F | 9.2% | 19.0% | 2.6% | 4.7% |
| Centereast | 478 | M/F | 5.5% | 5.3% | 2.5% | 5.6% |
| Centerwest | 260 | M/F | 3.0% | 8.2% | 2.9% | 2.7% |
| Northeast | 1329 | M/F | 8.3% | 17.9% | 2.8% | 4.5% |
| Northwest | 212 | M/F | 7.7% | 16.2% | 1.2% | 4.5% |
| Rio de Janeiro | 315 | M/F | 3.8% | 2.9% | 4.8% | 6.7% |
| São Paulo | 718 | M/F | 4.7% | 6.3% | 1.4% | 5.5% |
| South | 503 | M/F | 2.0% | 5.1% | 0.9% | 4.7% |

Source: FAO10

Table 1.2

National prevalence of anemia among different age groups

|  |  |  |  |
| --- | --- | --- | --- |
|  | Ages 0-5 (both sexes)  Anemia (Hb < 110 g/L) | Ages 15-19 (females)  Anemia (Hb < 120 g/L) | Ages >/= 20 (females)  Anemia (Hb < 120 g/L) |
| National  2006 – 2007 (n = 20,395) | **21.8%** 95% CI: (18.6, 24.9) | **37.3%** 95% CI: (31.3, 43.3) | **30.6%** 95% CI: (26.6, 34.6) |

Source: Conde, 201414

Table 1.3

Prevalence of obesity in Brazil, by gender and urban or rural setting

|  |  |  |
| --- | --- | --- |
|  | %Obese  Brazil 1997 | |
|  | Men | Women |
| Urban | 7.9% | 12.7% |
| Rural | 2.8% | 10% |

Source: Filozof, 200112

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