

# CHARACTERIZING HUNGER IN BRAZIL: IMPACT OF PROTEIN-ENERGY MALNUTRITION ACCORDING TO GBD COMPARE TOOL

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## RESUMO

**Characterizing Hunger in Brazil: impact of protein-energy malnutrition according to GBD Compare tool**

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## Abstract

**Introduction:** Food and nutritional security is the realization of everyone's right to regular and permanent access to quality food. In 2011 45% of children deaths in Brazil were related to malnutrition, which contributes to the maintenance of poverty and inequality. **Methods:** Data were collected from GBD Compare tool, between 1990 and 2019. The theoretical foundation was carried out through research on database platforms. **Results and Discussion:** Reduction of the rates of protein-energy malnutrition through the years was evidenced, on average a reduction of 6,2% every 10 years in all ages. The period of time of significant drop in food insecurity coincides with the implementation of specific policies for this purpose, and income redistribution policies, such as the Bolsa Família. **Conclusions:** The data showed that the situation of malnutrition in Brazil has decreased over the years, however the structural cause of food insecurity has not been removed.

**Keywords:** Food Sovereignty; Food Insecurity; Malnutrition.

## Introduction

Food has been considered a right since the end of World War II. Food Security is defined as regular and permanent access to quality food. Although the concept of food security has been expanded over the years, it is unable to provide a critical view of real causes of hunger in a population, which is better contemplated by the concept of food sovereignty. Via Campesina Internacional defines it as the peoples' right to define their food and agricultural policies in order to promote the development of national agriculture, based on small and medium production, respecting the culture, and in a sustainable manner.<sup>8</sup> However, both concepts are far from becoming reality.

A 2011 study revealed that 45% of children deaths in Brazil were related to malnutrition.<sup>7</sup> Child malnutrition impacts a child's life in various aspects, affecting physical and mental development and future school performance. It can be said that it is therefore a factor that contributes to the maintenance of poverty and inequality.<sup>7</sup> For this reason, it is important when studying malnutrition to give special emphasis to younger groups.

The etiology of malnutrition can be divided into three groups: immediate (related to the supply of

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food and some diseases), underlying (related to healthcare access and basic services) and structural (related to socioeconomic status).<sup>7</sup> Protein-energy malnutrition (PEM), on the other hand, is a clinical-social disease and can be characterized as an imbalance between the supply of energy and nutrients and the need for these for growth and maintenance of body physiology.<sup>4</sup>

To gather data on the real scenario of the prevalence and severity of PEM in Brazil, this study used the platform GBD Compare, launched by the Global Burden of Disease study, which uses variate data and studies through international cooperation aiming the survey of mortality, invalidity and other rates, and allows the visualization of global data concerning diseases and their risk factors.

The aim of this article is to demonstrate how PEM has progressed in Brazil over the past few years, as well as to discuss the factors that led to this scenario.

## Methods

Historical study about the evolution of PEM in Brazil from 1990 to 2019. Data were collected from the GBD Compare tool, including prevalence, deaths and Disability-Adjusted Life Years (DALYs) of Brazil, its states and regions, through the years 1990, 2000, 2010 and 2019. The theoretical foundation was carried out through research on Scielo and Pubmed platforms, using the words Food Sovereignty, Food Insecurity, Brazil, Malnutrition, Children. Articles in Portuguese and English were selected.

## Results and Discussion

The prevalence rates of PEM in all ages and in children under five years-old in Brazil is presented in table 1. It is possible to observe the reduction of the rates through the years, on average of 6,2% every 10 years in all ages, totalizing 17,5% of shrinkage, and a 3% every 10 years in children under five years-old, totalizing 8,8%. The reduction of PEM is expected as countries develop and are able to offer better quality of life to their populations. However, in 2019, 3,1% of the population under five years-old suffered from malnutrition, which could represent up to 380.000 children living with the most severe level of hunger.

Table 1: Prevalence of PEM in all ages and in children under five years-old in Brazil from 1990 to 2019 per 100.000.

	<5 years				All ages			
	1990	2000	2010	2019	1990	2000	2010	2019
<b>Brazil</b>	3396,92	3279,29	3196,38	3099,05	762,01	706,29	660,85	628,4

As for differences in-between the country, we observe the reduction of the prevalence in all five regions, both for all ages and children under five years-old. Nevertheless, in both cases, disparities between the regions are alarming. Higher rates were found in north and northeast regions, as smaller reductions through the years. While the South region had a reduction of 12%, the Northeast region had 2%, for children under five years-old. The comparisons between states for children under five years-old and for all ages are presented in figures 1 and 2, respectively.

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Figure 1: Prevalence of PEM in children <5 years by Brazilian regions between 1990 and 2019 per 100.000.

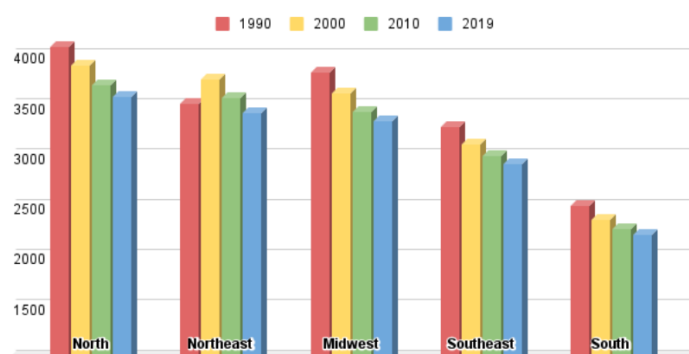
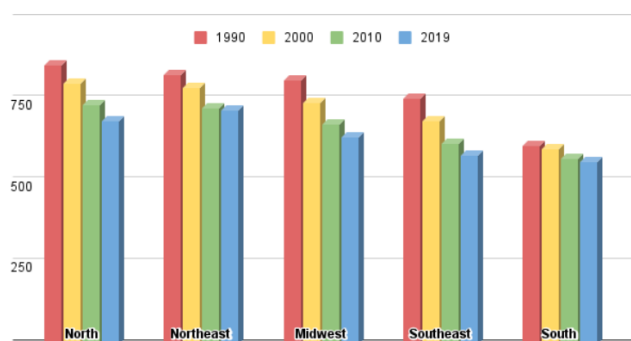


Figure 2: Prevalence of PEM in all ages by Brazilian regions between 1990 and 2019 per 100.000.



As for DALYs, PEM rates can be found in table 2. Like prevalence rates, it is possible to note the reduction of DALYs through the years. From 1990 to 2019, the reduction corresponded to 90.64% for children under five years-old, and 85,6% for all ages. As DALYs represent the sum of years of life lost due to premature mortality and years lived with disability due to the disease, we observe improvements in Brazilians' quality and duration of life, but losses - of lives and of lifetime - are still high.

Table 2: DALYs for PEM in all ages and in children <5 years in Brazil between 1990 and 2019 per 100.000.

	<5 years				All ages			
	1990	2000	2010	2019	1990	2000	2010	2019
<b>Brazil</b>	5752,99	3315,6	1082,79	538,62	751,51	404,01	166,48	108,27

Regarding deaths due to PEM, table 3 unites the collected date. It is possible to observe the reduction of deaths, especially between the years of 1990, 2000 and 2010 in children under five years-old. Also, in 1990 PEM was the seventh cause of death in children under five years-old, while in 2019 it occupied the 12<sup>th</sup> place in the ranking. Between all ages, PEM is not so relevant but has been reduced in great scales, evolving from 16<sup>th</sup> in the ranking in 1990, to 43<sup>rd</sup> in 2019. This demonstrates the importance in concentrating efforts to avoid PEM in children, as they're more vulnerable to the consequences of hunger.

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Table 3: Deaths due to PEM in children <5 five years and in all ages by region through 1990 to 2019 per 100.000.

	<5				All ages			
	1990	2000	2010	2019	1990	2000	2010	2019
Brasil	64,94	37,22	11,89	5,74	10,48	6,79	4,16	3,53
North	37,93	28,85	13,22	8,05	6,60	4,97	2,91	2,47
Northeast	116,29	71,34	21,14	8,61	18,76	11,53	5,57	4,09
Midwest	22,53	16,15	6,84	4,66	4,52	3,79	2,74	2,56
Southeast	51,01	18,59	5,74	3,49	9,29	5,74	4,24	3,90
South	23,23	11,35	4,34	2,69	4,10	3,08	2,45	2,48

Food insecurity is multifactorial, but studies show that family income is the most relevant in determining hunger.<sup>2</sup> Some of the factors pointed out in studies that intensify food insecurity are less possession of consumer goods, unemployment and low education, all directly related to the socioeconomic level of the family.<sup>6</sup> It is important to highlight that the study in question did not subdivide the population into the most vulnerable groups to be studied, such as race, gender and income. Thus, malnutrition rates in some groups are potentially higher than in the general population.

Specific programs that aim to reduce PEM were essential in the dropping rates presented in the study. Between 2004 and 2009 there was a significant drop in food insecurity in Brazil, moment that coincides with the implementation of specific policies for this purpose, such as Zero Hunger Strategy and redistribution policies, like Bolsa Família, and the appreciation of the minimum wage and reduction of unemployment.<sup>6</sup> However, it is important to emphasize that these programs are not able to attack the cause of hunger. The great land concentration and the focus on the production of commodities for export contribute to the unreachement of sovereignty.<sup>5</sup> Therefore, structural changes are needed to support the construction of food sovereignty.

### Conclusions

The data showed that the situation of malnutrition in Brazil has decreased over the years. This drop can be associated with the creation of specific policies to fight hunger and income distribution in the country. However, it is clear that the cut in these policies results in a new increase of hunger in the country, once the structural cause of food insecurity has not been removed.

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**PALAVRAS-CHAVE:** Food Sovereignty, Food Insecurity, Malnutrition

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