



# BJGH

Brazilian Journal  
of Global Health

Revista Brasileira  
de Saúde Global

## Hunger in Brazil: impact of protein-energy malnutrition according to GBDcompare tool

Agatha Picetti Gonçalves da Silva<sup>1\*</sup>, Luísa Teixeira Francisco e Gontijo<sup>2</sup>, Mariana Presot Elias<sup>2</sup>, Fabiana Chagas Oliveira de França<sup>3</sup>

<sup>1</sup>Nurse Resident in Primary Care Attention at Escola de Saúde Pública do Rio Grande do Sul (ESP/RS), Rio Grande do Sul, Brazil.

<sup>2</sup>Medical Student at Centro Universitário de Belo Horizonte (UNIBH), Minas Gerais, Brazil.

<sup>3</sup>Nutricionist, Professor at Faculdade AGES de Jacobina, Bahia, Brazil

### ABSTRACT

---

#### OBJECTIVE

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

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 significant drop in food insecurity coincides with the implementation of specific policies for this purpose, and income redistribution policies, such as the Bolsa Família.

#### CONCLUSION

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.

#### DESCRIPTORS

Food Sovereignty, Food Insecurity, Malnutrition.

---

#### Corresponding author:

Agatha Picetti Gonçalves da Silva.

Nurse Resident in Primary Care Attention at Escola de Saúde Pública do Rio Grande do Sul, 499 Dario Totta St. - Porto Alegre/RS - Brazil.

E-mail: [agathapicetti@hotmail.com](mailto:agathapicetti@hotmail.com)

ORCID ID: <https://orcid.org/0000-0003-4999-0562>

**Copyright:** This is an open-access article distributed under the terms of the Creative Commons

Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided that the original author and source are credited.

DOI: <https://doi.org/10.56242/globalhealth;2021;2;5;18-20>

**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 to promote the development of national agriculture, based on small and medium production, respecting the culture, and in a sustainable manner<sup>1</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>2</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>2</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 food and some diseases), underlying (related to healthcare access and basic services) and structural (related to socioeconomic status)<sup>2</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>3</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<sup>4</sup>.

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**

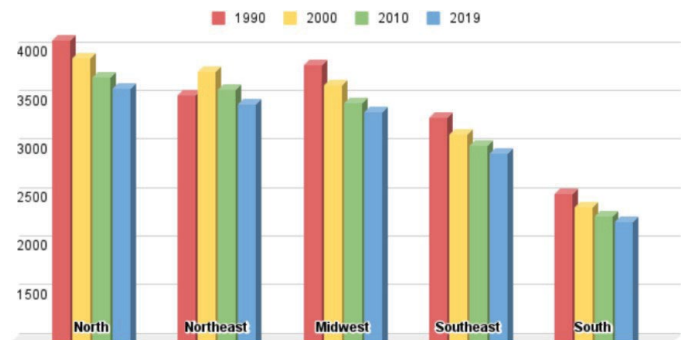
The prevalence rates of PEM in all ages and in children under five years-old in Brazil is presented in table 1. It is possible to observe the reduction of the rates through the years, on average of 6,2% every 10 years in all ages, totalizing 17,5% of shrinkage, and a 3% every 10 years in children under five years-old, totalizing 8,8%.

**Table 1.** Prevalence of PEM in all ages in children under five years old in Brazil from 1990 to 2019 per 1000.000.

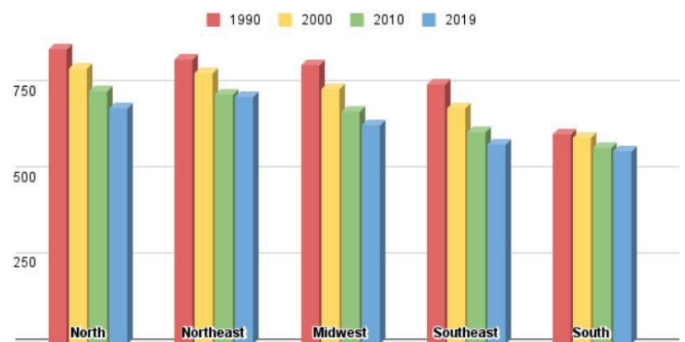
	<5 years				All ages			
	1990	2000	2010	2019	1990	2000	2010	2019
Brazil	3396,92	3279,29	3196,38	3099,05	762,01	706,29	660,85	628,4

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. The comparisons between states for children under five years-old and for all ages are presented in figures 1 and 2, respectively.

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



**Figure 2.** Prevalence of PEM in children <5 years by Brzilian 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.

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

	<5 years				All ages			
	1990	2000	2010	2019	1990	2000	2010	2019
Brazil	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.

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

	<5 years				All ages			
	1990	2000	2010	2019	1990	2000	2010	2019
Brazil	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

## DISCUSSION

Food insecurity is multifactorial, but studies show that family income is the most relevant in determining hunger<sup>5</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>.

The reduction of PEM is expected as countries develop and can 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. 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.

The study also managed to show the differences between the regions of Brazil, showing that the country suffers from great social inequality, and that this can be seen on maps. 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.

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.

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.

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>6,7</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 unreachment of sovereignty<sup>8</sup>. Therefore, structural changes are needed to support the construction of food sovereignty.

## CONCLUSION

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.

## REFERENCES

1. Tassi EMM, Bezerra I. A soberania alimentar que desperta e aprofunda os saberes em direitos por terra, por comida de verdade e por igualdade de gênero. EmExt. [Internet]. May 01, 2020 [Access in September 21st, 2021]; Available in: <http://www.seer.ufu.br/index.php/revextensao/article/view/54371>
2. Rissi GP, Shibukawa BMC, Goes HLF, Oliveira RR de. Crianças menores de 5 anos ainda morrem por desnutrição?. Rev enferm UFPE on line. 2019;13:e239889 [Access in September 21st, 2021]; DOI: <https://doi.org/10.5205/1981-8963.2019.239889>
3. Lima, AM de; Gamallo, SM; Oliveira, Fernanda LC. Desnutrição energético-proteica grave durante a hospitalização: aspectos fisiopatológicos e terapêuticos. Revista Paulista de Pediatria [online]. 2010, v. 28, n. 3 [Access in October 2nd, 2021], pp. 353-361. Available in: <https://doi.org/10.1590/S0103-05822010000300015>. Epub 22 Nov 2010. ISSN 1984-0462. <https://doi.org/10.1590/S0103-05822010000300015>.
4. Institute for Health Metrics. Estudo de Carga de Doença. Global: gerando evidências, informando políticas de saúde. Seattle, WA: IHME, 2013. ISBN 978-0-9840910-6-5
5. Bezerra, TA; Olinda, RA de; Pedraza, DF. Insegurança alimentar no Brasil segundo diferentes cenários sociodemográficos. Ciência & Saúde Coletiva [online]. 2017, v. 22, n. 2 [Access in October 2nd, 2021], pp. 637-651. Available in: <https://doi.org/10.1590/1413-81232017222.19952015>. ISSN 1678-4561. <https://doi.org/10.1590/1413-81232017222.19952015>.
6. Santos, TG dos et al. Tendência e fatores associados à insegurança alimentar no Brasil: Pesquisa Nacional por Amostra de Domicílios 2004, 2009 e 2013. Cadernos de Saúde Pública [online]. 2018, v. 34, n. 4 [Access in September 21st, 2021], e00066917. Available in: <https://doi.org/10.1590/0102-311X00066917>. Epub 29 Mar 2018. ISSN 1678-4464. <https://doi.org/10.1590/0102-311X00066917>.
7. Arruda, BKG de; e Arruda, IKG de. Marcos referenciais da trajetória das políticas de alimentação e nutrição no Brasil. Revista Brasileira de Saúde Materno Infantil [online]. 2007, v. 7, n. 3 [Access in September 21st, 2021], pp. 319-326. Available in: <https://doi.org/10.1590/S1519-38292007000300011>. Epub 05 Out 2007. ISSN 1806-9304. <https://doi.org/10.1590/S1519-38292007000300011>.
8. Miranda, A C de et al. Neoliberalismo, uso de agrotóxicos e a crise da soberania alimentar no Brasil. Ciência & Saúde Coletiva [online]. 2007, v. 12, n. 1 [Access in September 21st, 2021], pp. 7-14. Available in: <https://doi.org/10.1590/S1413-81232007000100002>. Epub 18 Jan 2007. ISSN 1678-4561. <https://doi.org/10.1590/S1413-81232007000100002>.