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(Mal)nutrition and the new epidemiological trend in a context of development and inequalities

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Abstract *The current context of intense social, economic and political transformations has contributed to changes in the health profile of the population and generated discussions about the impact of these changes on the reorganization of society. At the present moment, the increase in non-communicable illnesses and diseases raises major concerns about the paradox of malnutrition and obesity. Based on an in-depth reading and interpretation of texts, documents and databases, this article discusses issues related to nutrition, considering the dimensions of shortages and excesses, the evolution of nutrition over time, and the connection with the new epidemiological trend. We begin with a conceptual characterization, the historical background and the anthropological connections with the guiding theme of the article. We then describe the prevalence, distribution and secular trend of malnutrition and obesity, as well as the temporal relationship with the new epidemiological trend in Brazil within a context of development and inequalities. Finally, we reflect on the issue of (mal) nutrition in post-modernity, the new interests at stake in the health-disease process, as well as international experiences and strategies of partnerships designed to overcome these problems. We conclude by discussing some current advances and challenges in relation to the complexity and speed of contemporary changes.*

Key words *Nutritional transition, Inequality, Development, International cooperation*

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Introduction

This article aims to clarify aspects related to nutrition. It considers the dimensions of scarcity and excess, and the evolution of nutrition over time, as well as its connection with the new epidemiological trend in Brazil. For didactic purposes the article is divided into four sections, which complement each other in an attempt to approach the theme in an integral manner from historical concepts and foundations to contemporary society.

In order to delineate the evolution of the alimentary and nutritional profiles, and to highlight the possible networks and relations that exist between them, a starting point was the work of Josué de Castro and his interpreters, as well as publications by the Brazilian Institute of Geography and Statistics (IBGE), to characterize the period prior to 1970. For the period 1970-1990, the National Study on Family Expenditure (Endef)¹, the National Survey on Health and Nutrition (PNSN)² and the National Survey of Demography and Health (PNDS)³ were respectively used to characterize the three decades in question. Finally, the picture was brought up-to-date with data from the beginning of the twenty-first century using as sources the National Survey of Demography and Health of Women and Children (PNDSM)⁴ and the Household Budget Survey (POF)⁵.

The reflections concerning (mal)nutrition in postmodernity were developed from a triad proposed by Lefevre and Lefevre⁶ to understand the health-disease process from a market-based logic. Some collective health problems are described that stem from the imbalance of this triad, and examples are provided of international and Brazilian efforts that attempt to prioritize individual and collective needs to the detriment of market demands, as well as initiatives based on solidarity among countries such as South-South cooperation.

(Mal)nutrition: conceptual, historical and anthropological aspects

The approach to malnutrition in Brazil permeates the country's social, political and economic evolution and development. For this reason, it is essential to return to the pioneering and visionary contribution of the writer Josué de Castro, who hails from the state of Pernambuco and broke with the "conspiracy of silence" that permeated the issue of "hunger" in the 1940s and 1950s, helping to increase understanding about

this issue in all its dimensions by combining biological, anthropological, socioeconomic and political aspects.

According to Josué de Castro, he was first introduced to hunger in the marshes and miserable neighborhoods of the city of Recife in northeast Brazil. In his classic work *The Geography of Hunger* (*Geografia da Fome*) he describes the characteristics surrounding this theme in the different regions of Brazil, which he sub-divides into Amazonia, the sugarcane-producing northeast, the dry northeast, the mid-west, and the south. In the mid-1940s, endemic and epidemic hunger was identified in the first three of these regions and malnutrition was identified in all of them.

It is important to clarify the distinct and conceptual nature of some terms that have been used by classic authors, such as Josué de Castro, but which are still controversial today. Malnutrition, hunger, and poverty are often used as synonyms but, in fact, they are not. Monteiro⁷ outlines the differences between these terms and this article will adopt this particular conceptual perspective to direct the interrelations in this first part of the text.

For the aforementioned author, poverty represents the widest dimension, corresponding to the failure to satisfy basic needs such as food, housing, leisure, clothing, health, education etc. It is commonly measured through the availability of income to meet the elementary needs cited above, and when they are below the poverty line, i.e. the critical level of income, households and individuals are considered to be poor. The term "indigence" can be used when calculations regarding the poverty line only consider the costs of food for families.

In Monteiro's view⁷, hunger can manifest itself either acutely or chronically. Acute hunger equals the absence of food and, therefore, it can be detected in someone who is very thin. While chronic hunger, which is of particular interest in relation to this article, corresponds to an insufficient supply of energy and nutrients to perform daily activities, and it can manifest itself as energy malnutrition or chronic protein-energy malnutrition. It is difficult to directly measure hunger and, therefore, indirect methods predominate. In Brazil, the study that came closest to this perspective was the National Study on Family Expenditure (Endef), which evaluated family consumption by weighting food and such factors as income, and nutritional status.

The various modalities of nutritional deficiencies, or the absence of important elements

in the diet, can be understood as malnutrition. The latter manifests itself in the form of diseases that can be caused by insufficient food intake, as well as by early weaning, poor hygiene, persistent infections that compromise the biological utilization of food, excess consumption of food with specific deficiencies, and so on⁷. The growth of children (height by age) is one of the best global indicators of health and it also provides inferences regarding inequality in populations because malnutrition itself is one of the products of social inequality⁸.

The dimension of poverty seems to be close to the perspective adopted by the Food and Nutrition Security (SAN) and it also involves the other aforementioned concepts. However, the SAN alone does not guarantee that hunger and malnutrition will be overcome. Hunger can arise without poverty in momentary situations like wars and natural disasters, such as the impact of the earthquake and tsunami in Tohoku, Japan in 2011, and the breaching of the Samarco dams in Brazil (Mariana, MG) in 2015. On the other hand, a current, and yet also old, situation is the permanence of trans-social malnutrition, such as the examples of anemia in Brazil^{9,10} and the lack of iodine in Europe¹¹. The common aspect of all these categories is that they compromise the state of health and nutrition, as well as the vulnerability of the groups or people who are affected by them.

This new pattern of illness in the Brazilian population is strongly related to the historical processes of political interference in production, commercialization and export structures. These were decisive factors in the dismantling of agricultural and supply policies in order to strengthen agribusiness.

In the mid-1960s and 1970s, food policies tended to emphasize food distribution and supply, and agricultural incentive policies prioritized large producers. By 1990, with the advances of globalization and economic neoliberalism directing public policies in Brazil and the world, there were few state strategies to subsidize food supplies and there was a reduction in agricultural spending. At the same time, a model of compensatory policies for the direct protection of the needy was organized, but without really dealing with the problem of hunger.

By using compensatory policies, organized groups were prioritized and public resources began to be directed towards private initiatives in agriculture and other sectors. Small-scale farmers were directly hit and were practically forced to

quit farming, which encouraged a rural exodus, while large entrepreneurs maintained economic growth.

In parallel with the urbanization process, the production and supply of industrialized foods was intensified, which resulted in changes in eating habits and the increasing presence of these foods at markets where families bought their food. This ratified the devaluation of the rural population because fresh food became increasingly distanced from consumers and products were progressively modified by increased shelf life, adapted packaging and, finally, by the prominent space that they gained in supermarkets.

Reflecting on the heritage of culinary cultures, Jesús Hernández¹² reports that the process of homogenization resulting from globalization has led to the loss of economic, ecological and cultural diversity. The emergence of new spaces such as supermarkets, for example, which have very similar characteristics all over the world, with the same brands, the same franchises and the same foods, is part of a process that leads to the disappearance of the particular characteristics of places, regions or countries, and the widespread expansion of global lifestyles.

These new social spaces bring to mind the notions of the “*gabiru* man” and “crabs-with-brains”, which emerged in the 1990s from critical re-readings of Josué de Castro’s idea of “crab men”, amid the ongoing transfer of Brazilian society from the “mud” of underdevelopment to the “progress” of the construction of cities. The former phrase was used by Portella et al.¹³, and the latter was employed by the Manguebeat Movement in its “Manifesto of Crabs with Brains I”¹⁴, both of which figured heavily in the work of musician/composer Chico Science¹⁵.

*Vi um aratu pra lá e pra cá
Vi um caranguejo andando pro sul
Saiu do mangue, virou gabiru
Oh! Josué, eu nunca vi tamanha desgraça
Quanto mais miséria tem mais urubu ameaça
I saw an aratu here and there
I saw a crab walking south
It left the mangrove and turned into a gabiru
Oh! Josué, I've never seen such disgrace
The greater the misery the more the vultures circle*

Melo Filho¹⁶ analyzes the hermeneutics of the crab cycle and relates the “*gabiru* man” to the changes in social spaces provoked by capitalism, which led to the disappearance/landfill of mangroves and the distribution of people into more-or-less unhealthy areas. Consequently, the anal-

ogy with another “animal” would be the *gabiru*. The term “crabs-with-brains” seems to encourage these same people to move forward and not backwards, like crabs, to use their antennae and leave the mud in search of new vibrations as a route to emancipation.

Prevalence, distribution and secular tendency of (mal)nutrition in a context of development and inequalities

In the end, for the last 50 years would we be experiencing “a food/nutrition transition or an anthropological mutation?” and would we have been faced with an “epidemiological metamorphosis?” (*Afinal, estaríamos vivenciando há mais de 50 anos “uma transição alimentar/nutricional ou uma mutação antropológica?”; estaríamos diante de uma “metamorfose epidemiológica?”*). In this manner, Batista Filho and Vidal Batista¹⁷ use puns in Portuguese to lead us to reflect on the model of (mal)nutrition in force at the beginning of the twenty-first century amid demographic and epidemiological transitions.

In the 1940s, approximately 69% of Brazilians lived in rural areas and the majority of the economically-active population worked in agriculture, forestry, domestic and school activities, and with livestock (73.6%)¹⁸. In 2012, 84.8% of the population was concentrated in the urban areas of the country¹⁹, with important differences within the whole of Brazil. Over time these changes have transformed income-generating structures and produced an impact on lifestyles and nutritional status.

The average number of children for women of reproductive age decreased from 6.3 in 1940 to 1.8 in 2012^{18,19}. On the other hand, the infant mortality rate in the first year of life decreased from 124 deaths per thousand live births in 1960 to 16 in 2010^{19,20} and reached the millennium goal ahead of schedule (2015). At the same time, life expectancy increased from 42.7 years in the 1940s to 74.5 years in 2012^{18,19} and the projections are that it will reach 81.29 years in 2050, which are values close to those in China and Japan.

The changes cited above reflect the crossing and inversion of curves related to mortality and the birth rate at historical moments, as well as the fact of living in rural and urban areas. Improvements in living conditions and health, basic sanitation, education, housing, access to services, advances in technology due to antibiotics, contraceptives and the age of genetics, as well as sociocultural changes, such as the inclusion of

women in the labor market, urbanization and the coexistence with other diseases, are some of the aspects that have contributed to the current scenario.

All of the changes described above happened in Brazil at a later stage than in Europe, for example, but they happened quickly and intensely. Despite similar characteristics, the Brazilian context of inequity remains an obstacle to guaranteeing basic human rights such as the right to food. In order to better characterize these differences over a period of time, the following is a description of aspects of food and nutrition during three historical periods: prior to 1970; from 1970 to 1990; and after 1990.

Despite the fact that in the transitional period from the nineteenth to the twentieth century it seemed that there was a higher level of energy expenditure, figures regarding calorie intake ranged from 1,600 to 1,700 calories²¹ or less²². Malnutrition was present in all regions of Brazil, albeit due to diverse causes and with varying manifestations, which is why Josué de Castro distributed the country into three “areas of hunger” and two “areas of malnutrition”. If we compare the current division of the country, it could be designated as two areas of hunger (the north and northeast) and three areas of malnutrition (the south, southeast and mid-west).

During this period, nutritional deficiencies, such as sodium deficiency, iron deficiency anemia, goiter (iodine deficiency), beriberi (vitamin B1 deficiency in the Amazon), and protein and caloric deficits, which were manifested in the most severe forms of malnutrition (marasmus and kwashiorkor), as well as endemics such as verminoses, schistosomiasis, Chagas disease and malaria (in the Amazon), were all evident. However, the south of Brazil presented the most balanced dietary pattern, which was mainly due to the colonization process and the subsequent settlement and development of the region.

In spite of the fact that he was writing at a time of an epidemiological reality that was very different from the present, Josué de Castro made reference to differences in alimentary profiles being linked to social classes, with those differences being enshrined in the condition of slavery, for example. Josué de Castro also referenced the presence of scarcity and excess; while some were hungry due to the absence of food, others were overfed, characterizing both these situations as inducing malnutrition.

In the period that followed, massive agricultural production was encouraged, with the

justification of overcoming hunger, which was indirectly verified by means of low body weight, as detailed above. The prevalence of low body weight in the northeast of Brazil (15.5%) was twice that found in the south of the country (7.2%) but it was already possible to see that the condition of being overweight was also a public health problem because 21.9% of the adult population in Brazil was overweight⁵. In adult women, the weight deficit was corrected from 1975-1989, with the exception of the rural northeast (12.2%), but it remained in decline in the latter decade²³.

Comparing national surveys for the 1970s, 1980s and 1990s^{1,3}, a decline in malnutrition can be observed, with a reduction of approximately 72% in height deficit in children. The greatest variations occurred in urban areas compared to rural areas. The differences between the countryside and the city increased over the aforementioned three periods by about 50% (40.5% and 26.6%), 80% (22.7% and 12.5%) and 145% (18.9% and 7.7%) respectively²³, which characterizes malnutrition as a product of inequality.

On the other hand, the percentage of overweight boys and girls aged 5-9 increased from 13.8% to 19.1% and from 10.4% to 14.3%, respectively^{1,2}. In adult women, the increase was from 22.2% (1974-1975) to 39.1% (1989) and 47.0% (1995-1996), which represented a 112% increase in overweight (BMI ≥ 25.0 kg/m²)²³.

Mortality due to non-communicable chronic diseases increased more than three-fold between the 1930s and the 1990s²⁴. On the other hand, anemia remained a problem and studies in the states of São Paulo and Paraíba highlighted an increase in the prevalence of anemia of 116% in São Paulo from 1974-1975 to 1995 (22% to 46.9%). In Paraíba the increase was 88% from 1982-1992 (19.3% to 36.4%)²⁵⁻²⁷. Conversely, after approximately three decades of scientific, political and economic obstacles the prevalence of endemic goiter was reduced. The iodination of cooking salt was only implemented throughout Brazil in 1974, when the issue of coping with this problem became of international concern²⁸.

In addition to regional inequalities, the perpetuation of social injustices is also evident in relation to vulnerable groups such as indigenous people, *quilombolas*, women and children, even in regions that are historically more socially and economically developed, such as the south of Brazil. A 1995 study of Terenas indigenous children (Mato Grosso do Sul, Brazil) found a 15% deficit in height and an 86.1% prevalence

of anemia for children aged between six and 24 months, while there was a significant increase in weight in relation to age and height²⁹.

In the dietary trends associated with these nutritional changes, there was an increase in the consumption of soft drinks, biscuits, sausages and processed meals of 425%, 218%, 173% and 77%, respectively^{1,5}. In contrast, the consumption of eggs, animal fat, fish, roots and tubers reduced by 83%, 63%, 38% and 33%, respectively^{1,5}. The average consumption of salt in Brazil (12 g/day) is twice the World Health Organization (WHO) recommendation and is close to the per capita consumption found in the most developed countries³⁰.

Improvements in areas such as the greater availability of varieties and quantities of food, the implementation of assistance policies that have improved the access and distribution of the latter, as well as the expansion of sanitation, the primary health network, improved maternal schooling and family income, made it possible for some millennium goals to be achieved in Brazil, such as the eradication of hunger and overcoming stunting, which affected 1.7% and 6.7% of children, respectively, in 2006⁴. At the same time, Brazil came to occupy the 77th position in the WHO ranking in relation to obesity.

At the beginning of the twenty-first century, research reaffirmed the intense inequalities that are unfairly manifested in vulnerable groups within Brazil; the same groups that continue to be afflicted by chronic malnutrition (26% of indigenous children, 16% of people living in *quilombolas*, 15% of families receiving money from income transfer programs, 5% of those living in the north of the country), anemia (20.9% of children and 29.4% of women of childbearing age) and hypovitaminosis A (17.4% of children and 12.3% of women of childbearing age)⁴.

The continuous coexistence with malnutrition did not affect the gradual and rapid growth of obesity in Brazil. From 2014-2015, the prevalence of overweight adolescents was 23.7% in boys and 23.8% in girls³¹, while 52.5% of Brazilian adults were overweight and 17.9% were obese³². Some positive developments recorded in recent times include an 18% increase in the number of people practicing physical exercise (2009-2014) and a 19.3% reduction in the number of people who watched television for three or more hours per day (2006-2014), as well as the tendency for obesity to stabilize from 2012-2014³².

In the midst of overcoming the problems caused by hunger, malnutrition and extreme

poverty, the outbreak of beriberi in the state of Maranhão from 2006-2008 left the scientific community perplexed because it was a case of a primary deficiency of vitamin B1 (thiamin) in the midst of a technological era. The main determinants were alcohol abuse and heavy physical activity, in addition to possible exposure to pesticides. All of these aspects were related to the social changes that had taken place over the previous decades in the region, including a predominance of exploratory agriculture and scant production of basic foodstuffs, extensive farming, as well as intense deforestation to meet the demands of loggers and mining companies³³, which resulted in changes in labor relations, the local economy, and the local culture, thereby accentuating inequities.

These paradoxes have also been experienced in countries that have overcome the problems of hunger, malnutrition and extreme poverty. According to WHO estimates, iodine deficiency in Europe remains a public health problem, even though the mild form of the deficiency is predominant¹¹. In 2011, there were still 32 countries with this problem worldwide and 11 (34%) of them were in Europe, the highest percentage in continental terms³⁴. Conversely, obesity has also proved to be a major challenge in Europe, with rapid growth among groups with the lowest levels of income and education^{35,36}.

In the United States, the continuation of deep inequalities in terms of income and race has also contributed to problems in dietary patterns. The poorest, and those living in situations of food insecurity, are more likely to be obese because they are more exposed to low quality food at affordable prices³⁷.

The historical analysis of nutritional data reaffirms that, although there have been important advances in the reduction of nutritional deficits in Brazil, there are still intense inequalities in the country, and also worldwide, and these are manifested disproportionately in vulnerable groups. Furthermore, these illnesses overlap and add up over time; even when they appear to have been overcome, they re-emerge with specific characteristics and are adapted to the new environment, which is constantly modified by humans.

The paradoxes of scarcity and excess, the global and the local, development and inequality, are constant contradictions within postmodern society and they have interfered in the way that people behave, eat, relate to each other, and develop illnesses. What seem to be two contrasting sides of the same coin appear to be as homo-

geneous, as capitalist attempts to standardize society through consumption. Because obesity, anemia and other nutritional deficiencies coexist in the same body, and in all social classes, they are differentiated by the socio-cultural context in which these people exist; they can develop due to access, knowledge and other conditions, or the lack thereof, related to dealing with the problem.

Reflections on (mal)nutrition in postmodernity

In addition to the social determinants of health, the principles of a capitalist society can be directly related to the process of illness, and therefore the discussion of macro-politics must be intrinsically linked to the nutritional and epidemiological changes discussed in this article. In the middle of the twentieth century, Josué de Castro³⁸ argued that underdevelopment was a by-product of development, and in modernity the process of exploitation seems to be camouflaged by the various pleasures that are sold/provided.

From this perspective, Lefevre and Lefevre⁶ have constructed a triangular model to explain the health-disease process from a market-based logic and they describe the protagonists in this model as individuals, the productive system and technical staff (health professionals). For individuals, health is seen as a “sensation” because it is felt; for the productive system, health is considered to be a “commodity” because it is sold; and from the technical point of view, health is viewed as a kind of “power or authority” because it is the exercise of providing health. All these actors should monitor themselves to balance their respective forces and to ensure that all interests are considered within their limits for the sake of health. However, in the current context, food and nutrition have become commodities and they feature on the agenda of contemporary interests, thereby, changing the means of production and also the way food is bought and prepared. In this logic of consumption, the nutrification of foods and the chemification of drugs and healthy lifestyles⁶ serve the productive system, often articulated through the technical power of health professionals, which exerts a strong influence on individuals.

An illustration of this is the fact that beauty medicine is one of the fastest growing forms of medicine in the world, and the dietary component is widely disseminated through various types of communication. It is also one of the fac-

tors related to new forms of malnutrition such as eating disorders (anorexia, bulimia), food intolerances and allergies, cancers and others. *The body is more than ever represented as the perfect expression of evolution: the human body is the very image of human culture*³⁹.

In addition, various health problems are the by-products of local capitalist demands such as the indiscriminate use of agricultural pesticides in large-scale agribusiness. The latter results in the following: the contamination of food and even of breast milk; marketing and advertising aimed at children which contributes to obesity and malnutrition in children; and the over-processing of food to meet the demands of time and space, which results in the modification of nutritional composition and the addition of artificial structures that are unknown by the human metabolism and are capable of generating serious metabolic problems. The environmental and collective impacts resulting from these demands remain little publicized or anonymous in order to safeguard market interests.

However, it is possible to identify tentative initiatives that defy the logic of the market both within Brazil and abroad. In the United States, the city of Berkeley, California was the first to approve a tax of approximately 10% on sugary drinks⁴⁰. In the United Kingdom the measure was more recent (2016) and in Brazil a draft legislation has been drawn up (1.755/2007) to prohibit the sale of soft drinks in primary schools. These measures have also been criticized by those who feel that they penalize consumers and limit their autonomy.

Chile and Ecuador have adopted a labeling system where information and alerts are placed on the front of packaging to draw consumers' attention to the quality of foods⁴¹. Other initiatives, such as the regulation of marketing and advertising in relation to food, remain a challenge both in developed and developing countries. In Brazil, the Brazilian Standard for the Marketing of Foods for Infants and Young Children, Rubber Nipples, Pacifiers and Bottles, which represents a set of norms to regulate the commercial promotion and labeling of foods and products intended for newborns and children aged under three, was regulated almost ten years after its creation, through Decree No. 8.552 on 3/11/2015.

Brazil has also adopted wider measures, including incentives for local and family production with purchase guarantees, such as the Food Acquisition Program (PAA) and the inclusion of family agriculture in the National School Feed-

ing Program (PNAE). Using these measures it is possible to guarantee income for families; to allow them to stay in their place of origin instead of migrating to large urban centers; to encourage sustainable production; to protect local culture and traditional food standards; and to introduce healthy food into schools. Through the auspices of South-South cooperation, a partnership was signed with Mozambique to promote the transfer of knowledge and to offer technical support to enable the preparation and implementation of the National School Feeding Program of Mozambique, which was based on Brazilian experience but also took into consideration local culture and conditions⁴². Some results can already be observed, such as the increase in school attendance in the district of Changara and the presence of vegetable gardens in 80% of schools in Cahora-Bassa, producing foods such as maize, kale, tomatoes and onions⁴².

Dealing with acute and chronic diseases is complicated because it involves a confrontation with economic interests (the power of strong industries such as food, beauty and pharmaceuticals), as well as the necessity to establish partnerships based on solidarity. The Second International Conference on Nutrition (ICN2) contained a range of policy actions that governments have undertaken to implement in order to address malnutrition in all its forms (overweight and obesity, growth retardation, micronutrient deficiencies)⁴³. The proposals included increasing locations for food production and processing, especially for small farmers; incentives to reduce saturated fat, sugar and salt from foods and beverages; staff training; the regulation of food marketing and advertising, especially with regard to the marketing of breast-milk substitutes; and the creation of environments conducive to promoting physical activity from the earliest stages of life, among others.

There are many interests that permeate the issues related to health and nutrition in contemporary society, but respect for individual choices and the autonomy of individuals should be emphasized. However, this can also be interpreted as empowering individuals to make correct choices, and for this reason the state must act in favor of protecting collectivity through public policies that emphasize education, health promotion and regulatory efforts, so that collective rights are not curtailed for the benefit of a minority and individuals are not constantly blamed for failing to fit into behavioral patterns.

Conclusions

Reflections about development based on nutrition allows us to broaden our vision, to understand the historical interests of agricultural income-transfer policies, changes in market-based logic and its relationship with food, as well as the human consequences of the current production resources and the predatory use of natural resources.

Changes in society are continuous throughout history, and they serve economic, political and social interests. However, they have intensified in Brazil and worldwide due to factors such as demographic variations, urbanization, industrialization and globalization. (Mal)nutrition in contemporary society presents itself in a camouflaged way, mixing excesses with “hidden hunger”, as Josué de Castro would refer to it. Some shortcomings remain, such as anemia. Others have been overcome, such as goiter, and still others have emerged from stressful and intense routines, the loss of cultural identity and a commitment to environmental sustainability and biodiversity. At the same time, excess weight remains on the increase.

Faced with this scenario, some strategies have been implemented, such as the following: the “Surveillance of Risk Factors and Protection against Chronic Diseases”⁴⁴, which is intended to continuously monitor the eating and physical activity habits of Brazilians, thereby making management decision-making easier; income-transfer programs that have increased family spending

on food and have permitted greater autonomy for individuals⁴⁵; the structuring of health-promoting public environments, such as health clubs; as well as the *Food Guide for the Brazilian population* (2014)⁴⁶, which considers the representation of food in its entirety, from the production chain to its modifications and availability within the family, and which highlights the importance of culinary customs and habits. However, although these initiatives represent advances, it is necessary to take into account the fact that they are not distributed equally throughout Brazil, which has maintained the existence of the same vulnerable groups and areas, making it even more complex to confront the paradoxes of malnutrition and obesity, and scarcity and excess.

Consequently, structural changes are required, starting with a differentiated approach to groups in vulnerable situations, i.e. policies that are more focused on reducing social inequities and less directed towards welfare actions. The strengthening of investment in education, the reorganization of the land-ownership structure, and the regulation of internal and external markets with a view to the health interests of the population should all be emphasized. Finally, it is important to recognize the global nature of (mal)nutrition because this reinforces the need for the exchange of experiences and knowledge through national and international cooperation to strengthen ties of solidarity, stimulate social participation, and to help to address problems regarding health and nutrition.

Collaborations

NP Souza participated in the design and writing; PIC Lira worked on the design and critical review; FCL Pinto contributed to the critical review; A Fontbonne participated in the writing and critical review; EAP Cesse participated in the writing and critical review.

References

1. Instituto Brasileiro de Geografia e Estatística (IBGE). *Estudo Nacional de Despesa Familiar (Endef) (1974/1975)*. Rio de Janeiro: IBGE; 1976.
2. Instituto Brasileiro de Geografia e Estatística (IBGE); Ministério da Saúde (MS). *Pesquisa Nacional sobre Saúde e Nutrição: perfil de crescimento da população brasileira de 0 a 25 anos 1989*. Brasília: IBGE; 1990.
3. Brasil, Ministério da Saúde (MS). *Pesquisa Nacional sobre Demografia e Saúde – PNDS 1996*. Brasília: Sociedade Civil Bem-Estar Familiar no Brasil; MS; 1997.
4. Brasil, Ministério da Saúde (MS). *Pesquisa Nacional de Demografia e Saúde da Criança e da Mulher - PNDS 2006: dimensões do processo reprodutivo e da saúde da criança*. Brasília: MS; 2009.
5. Instituto Brasileiro de Geografia e Estatística (IBGE); Ministério da Saúde (MS). *Pesquisa de Orçamentos Familiares 2002-2003: análise da disponibilidade domiciliar de alimentos e do estado nutricional no Brasil*. Rio de Janeiro: IBGE; 2005.
6. Lefevre F, Lefevre AMC. *O corpo e seus senhores: homem, mercado e ciência: sujeitos em disputa pela posse do corpo e da mente humana*. Rio de Janeiro: Vieira & Lent; 2009.
7. Monteiro CA. A dimensão da pobreza, da desnutrição e da fome no Brasil. *Estudos avançados* 2003; 17(48):7-20.
8. De Onis M, Frongillo EA, Blössner N. Is malnutrition declining? An analysis of changes in levels of child malnutrition since, 1980. *Bull World Health Organ* 2000; 78(10):1222-1233.
9. Batista Filho MB, Souza AI, Bresani CC. Anemia como problema de saúde pública: uma realidade atual. *Cien Saude Colet* 2008; 13(6):1917-1922.
10. Oliveira CSM, Augusto RA, Muniz PT, Silva SA, Cardoso MA. Anemia e deficiência de micronutrientes em lactentes atendidos em unidades básicas de saúde em rio Branco, Acre, Brasil. *Cien Saude Colet* 2016; 21(2):517-529.
11. World Health Organization (WHO). Fundo das Nações Unidas para a Infância (UNICEF). *Iodine deficiency in Europe: a continuing public health problem*. Geneva: WHO; 2007.
12. Hernández JCO. Patrimônio e Globalização: o caso das culturas alimentares. In: Canesqui AM, Diez Garcia RW, organizadores. *Antropologia e nutrição: um diálogo possível*. Rio de Janeiro: Editora Fiocruz; 2005. p. 129-145.
13. Portella T, Aamot DPZ. *Homem-gabiru: catalogação de uma espécie*. São Paulo: Hucitec; 1992.
14. Zero Quatro, Fred. *Caranguejos com Cérebro*. 1992. [acessado 2016 out 17]; [cerca de 1 p.]. Disponível em: http://www.recife.pe.gov.br/chicoscience/textos_manifesto1.html.
15. *Da lama ao caos* [CD]. Science C, Zumbi N: Chaos; 1994.
16. Melo Filho DA. Uma hermenêutica do ciclo do caranguejo. In: Andrade MC, Silva JG, Belik W, Takagi M, Cunha H, Batista Filho M, Batista LV, Melo Filho DA, Soares JA, Duarte R, Zaidan Filho M, organizadores. *Josué de Castro e o Brasil*. São Paulo: Editora Fundação Perseu Abramo; 2003. p. 61-72.
17. Batista Filho M, Vidal Batista L. Transição alimentar/nutricional ou uma mutação antropológica? *Rev. Alimento/Artigos* 2010; 62(4):26-30.
18. Instituto Brasileiro de Geografia e Estatística (IBGE). *Tendências demográficas: uma análise da população com base nos resultados dos censos demográficos 1940 e 2000*. Rio de Janeiro: IBGE; 2007.
19. Instituto Brasileiro de Geografia e Estatística (IBGE). *Síntese dos indicadores sociais: uma análise das condições de vida da população brasileira 2013*. Rio de Janeiro: IBGE; 2013.
20. Instituto Brasileiro de Geografia e Estatística (IBGE). *Projeção da população do Brasil por sexo e idade para o período 1980-2050*. Rio de Janeiro: IBGE; 2004.
21. Castro J. *Geografia da fome*. 11ª ed. Rio de Janeiro: Griphus; 1992.
22. Interdepartmental Committee on Nutrition for National Development (ICNND). *Northeast Brazil, Nutrition Survey, March-May, 1963*. Washington: ICNND; 1965.
23. Batista Filho M, Rissin A. A transição nutricional no Brasil: tendências regionais e temporais. *Cad Saude Publica* 2003; 19(1):181-191.
24. Barreto ML, Carmo EI. Tendências recentes das doenças crônicas no Brasil. In: Lessa I, organizador. *O adulto brasileiro e as doenças da modernidade: epidemiologia das doenças crônicas não-transmissíveis*. São Paulo: Hucitec; 1998. p. 15-27.
25. Batista Filho M. Alimentação, nutrição & saúde. In: Rouquayrol ZM, Almeida Filho N, organizadores. *Epidemiologia & Saúde*. 5ª ed. Rio de Janeiro: Medsi; 1999. p. 353-374.
26. Santos L. *Bibliografia sobre Deficiência de Micronutrientes no Brasil, 1990-2000: Vitamina A*. Brasília: Organização Pan-Americana da Saúde, Organização Mundial da Saúde; 2002.
27. Oliveira RJ, Diniz AS, Benigna MJ, Miranda-Silva SM, Lola MM, Gonçalves MC. Magnitude, distribuição espacial e tendência da anemia em pré-escolares da Paraíba. *Rev Saude Publica* 2002; 36(1):26-32.
28. Hochman G. O sal como solução? Políticas de saúde e endemias rurais no Brasil (1940-1960). *Sociologias* 2010; 12(24):158-193.
29. Moraes MB, Alves GMS, Fagundes-Neto U. Estado nutricional de crianças índias terenas: evolução do peso e estatura e prevalência atual de anemia. *Jornal de Pediatria* 2005; 81(5):383-389.
30. Sarno F, Claro RM, Levy RB, Bandoni DH. Estimativa de consumo de sódio pela população brasileira, 2002-2003. *Rev Saude Publica* 2009; 43(2):219-225.
31. Instituto Brasileiro de Geografia e Estatística (IBGE), Ministério da Saúde (MS). *Pesquisa Nacional de Saúde do Escolar 2015*. Rio de Janeiro: IBGE; 2016.
32. Brasil. Ministério da Saúde (MS). Departamento de Vigilância de Doenças e Agravos não transmissíveis e Promoção da Saúde. *Vigitel Brasil 2014: vigilância de fatores de risco para doenças crônicas por inquérito telefônico*. Brasília: MS; 2015.
33. Lira PIC, Andrade SLLS. Epidemia de beribéri no Maranhão, Brasil. Rio de Janeiro: *Cad Saude Publica* 2008; 24(6):1202-1203.
34. Andersson M, Karumbunathan V, Zimmermann MB. Global iodine status in 2011 and trends over the past decade. *J Nutr* 2012; 142(4):744-750.

35. Loring B, Robertson A, organizadores. *Obesity and inequities. Guidance for addressing inequities in overweight and obesity*. København: WHO Regional Office for Europe; 2014.
36. University Medical Center Rotterdam, Department of Public Health. *Tackling health inequalities in Europe: an integrated approach. Eurothine*. Rotterdam: Erasmus MC, University Medical Center Rotterdam; 2007.
37. Silver L. A regulação de fatores de risco para doenças crônicas: experiências dos Estados Unidos. In: *Observatório Internacional de Capacidades Humanas, desenvolvimento e políticas públicas*. Brasília: UnB/ObservaRH/Nesp, Fiocruz/Nethis; 2015. p. 185-210.
38. Castro J. *Geopolítica da fome*. Rio de Janeiro: Casa do Estudante do Brasil; 1951.
39. Remaury B. *Le beau sexe faible: Les images du corps féminin entre cosmétique et santé*. Paris: Grasset & Fasquelle; 2000.
40. City of Berkeley. *Imposing a general Tax on the distribution of sugar sweetened Beverage Products*. [acessado 2016 ago 23]. Disponível em: <https://www.cityofberkeley.info/uploadedFiles/Clerk/Elections/Sugar%20Sweetened%20Beverage%20Tax%20-%20Full%20Text.pdf>.
41. Biblioteca del Congreso Nacional de Chile. Guia legal sobre etiquetado de alimentos. 2015. [acessado 2016 out 17]. Disponível em: <http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/ucm247920.htm>.
42. Santarelli M. *Cooperação Sul-Sul brasileira: a experiência do Programa Nacional de Alimentação Escolar em Moçambique*. Rio de Janeiro: ActionAid Brasil; 2015.
43. World Cancer Research Fund International, NCD Alliance. *Ambitious, SMART Commitments to address NCDs, overweight & obesity 2016*. [acessado 2016 out 17]. Disponível em: <http://www.wcrf.org/sites/default/files/SMART-Advocacy-Brief-WCRFI-NCDA-EN.pdf>.
44. Brasil. Ministério da Saúde (MS). *Vigilância de fatores de risco e proteção para doenças crônicas por inquérito telefônico – Vigitel*. [acessado 2016 out 28]. Disponível em: <http://tabnet.datasus.gov.br/cgi/vigitel/vigteldescr.htm>.
45. Martins APB. *Impacto do Programa Bolsa Família sobre a aquisição de alimentos em famílias brasileiras de baixa renda* [tese]. São Paulo: Faculdade de Saúde Pública; 2013.
46. Brasil. Ministério da Saúde (MS). *Guia alimentar para a população brasileira*. Brasília: MS; 2014.