

Brazilian school feeding during the COVID-19 pandemic

Ana Carla Bittencourt Reis *

University of Brasilia

<https://orcid.org/0000-0002-2141-8997>

Mara Lúcia Castilho

Federal Institute of Brasilia

<https://orcid.org/0000-0002-8467-447X>

Ana Paula Melo Mariano

State University of Santa Cruz

<https://orcid.org/0000-0002-3177-7790>

Edilson de Souza Bias

University of Brasilia

<https://orcid.org/0000-0003-0334-0476>

Author contributions:

ACBR conceptualized, designed, collected data, provided information and elaborated the study. MLC collected information and data, elaborated the study and reviewed the paper. APMM collected data and provided public health information. ESB collected data and provided description of local scenario. All authors approved the final version of the manuscript.

Abstract

School feeding is part of for million students' routine worldwide. Schools' closure during the COVID-19 pandemic brought to the fore the challenge of providing food for children and adolescents by alternative means, through food programs, whether governmental or otherwise. In Brazil, approximately 40.1 [1] million children and adolescents enrolled in basic public education were affected and went without their daily meal during this period. To provide them food, most local governments chose to transfer financial resources to their parents. The challenge of knowing if children are receiving these meals adequately during school closures, which can be lengthy, is the target of this study. The current situation in the 27 Brazilian federated entities regarding the transfer of funds and delivery of meals is presented herein. A monitoring model is proposed for children and adolescents to be followed during the pandemic, in order to guarantee their adequate nutrition.

Keywords: School feeding, Monitoring, COVID-19, Food programs, School closure.

1 Introduction

The first case of COVID-19 was recorded in December 2019, in the city of Wuhan, China [2]. In Brazil, the first recorded cases were in February 2020 [3], and, among the measures taken to contain the spread of the pandemic, social distancing has been widely adopted as a non-pharmaceutical measure. Other measures taken include the closure of educational institutions at all levels, followed by restaurants, offices, and commerce in general, in addition to others.

As of April 2020, school closures during the pandemic, affected approximately 197 countries and 1.6 billion children and adolescents [4]. Of this number, there are currently about 352 million that are no longer receiving meals at school, and for many, these are the only meals of the day [4]. There are countries with a significant number of students regularly benefiting from school meals that are being affected by this pandemic, such as: India (approximately 90.4 million), Brazil (40.1 million), United States (30 million), Egypt (11 million), Nigeria (9.8 million), South Africa (9.2 million), Turkey (6.1 million), Colombia (4 million), Peru (2.3 million), Bolivia (2.3 million), Ethiopia (2.5 million), and Argentina (1.6 million) [1].

Providing food is one of the functions performed by a school, in addition to others, such as education, socialization, and care for children and adolescents [5]. Maintaining a healthy diet is crucial for preserving the general well-being of a population. A good nutritional status is directly related to proper development and growth in childhood, better immune response, less risk of developing diseases, and is fundamental for recovery, in cases of infection [6,7].

School feeding programs work under the auspices of promoting Food and Nutritional Security (SAN) and it is in this context that the school environment is the fundamental and strategic space for promoting SAN, since it provides meals and also helps in the formation of healthy eating habits. The benefit of school meals is incalculable, because healthy eating is a way of providing child development through adequate nutrition, improving cognitive ability, as well as contributing to reducing school dropout rates. Therefore, in countries with great social difficulties, such as Brazil, Mexico, Ecuador and Ghana, for example, many children rely on schools as their main source of food [8]; and, during this pandemic, the lack of food can impair the development of these children and adolescents and contribute to increased school dropout rates [9].

It is worth mentioning that the more precarious a child's food situation is, that is, the more vulnerable the family structure is to supplying basic needs, the greater the importance of school [5] for filling this deficiency. In addition, in situations of social vulnerability, school meals constitute an indirect income for families, and this can contribute to overall family income. [10].

In the article, "Mitigating the effects of the COVID-19 pandemic on food and nutrition of schoolchildren," UNESCO mentions the transfer of money to families affected by the closure of educational institutions, via the card normally used to acquire school supplies. According to this article, the amount of the transfer varies according to the daily number of meals that children usually receive in schools [11].

The Brazilian government passed Law 13,987/20 in order to guarantee the distribution of food to the families of students in public schools (from zero to 17 years old), whose classes were suspended during the new coronavirus pandemic [12] through the National School Feeding Program - PNAE. However, little is known about the effectiveness of the adopted measures.

When seeking to know more about this process on the websites of Brazilian state education departments, little information was found on this topic, or on the number of children and

adolescents benefiting from this measure, which among other reasons, influenced the motivation of this research.

In light of the above, and in addition to promoting a discussion about this important and urgent problem, this work aims to: present the types of transfer (food and/or cash rations) carried out by Brazilian state authorities to children and adolescents who are away from school; and propose strategies for monitoring and controlling the use of these transfers by families, in order to mitigate the risks arising from the lack of food for these students during the COVID-19 pandemic.

2 The role of school feeding programs

As illustrated in Figure 1, schools play at least four roles that reflect their importance in the lives of children, adolescents, family members, and to society as a whole. At the heart of this context, especially when considering cognitive development, education is driven by: socialization, through which children and adolescents can develop their socio-emotional skills; care, that is being a safe place where parents can leave their children to be able to work; and, finally, through food, because in many cases this is the only food meeting the nutritional standards necessary for development and health that children and adolescents manage to obtain. There is a complexity in fulfilling the objectives of each of these school roles during this pandemic, which has further challenged educators, governments, schools, and families.

In Brazil, public schools are specifically represented by the model in Figure 1, as they play a fundamental role in the development, training and care of children and adolescents, especially in view of their vulnerability within their social environments, and who in most cases, come from low-income families and difficult social conditions

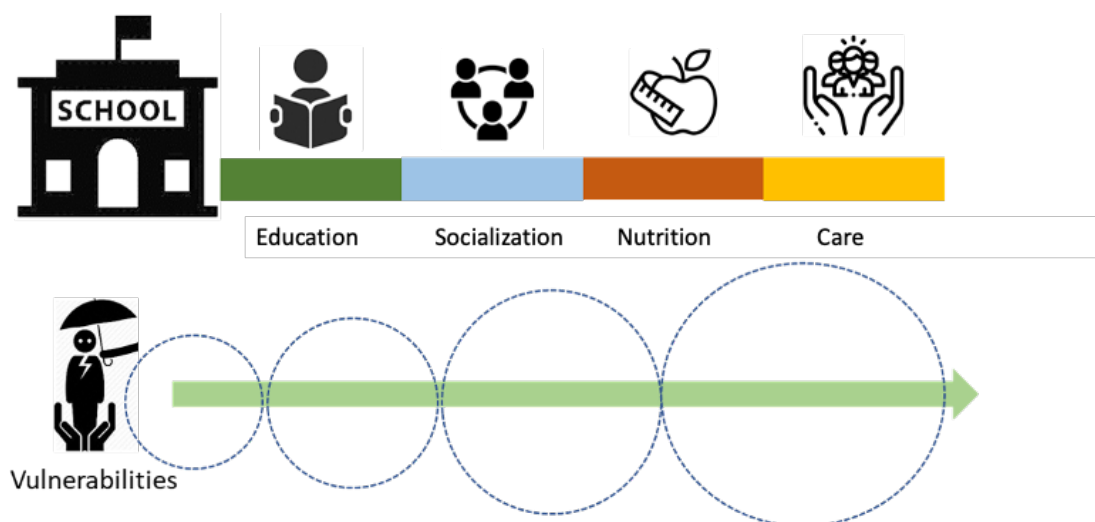


Figure 1. Role of the school in the student's life. Adapted from [5]

During the pandemic, alternatives to classroom education such as distance teaching and remote monitoring have been implemented to reduce the impacts upon cognitive development as a consequence of material expected to be otherwise taught throughout the school year. The care and

socialization offered by the school are factors to be discussed, and the impact of the closure of schools upon these factors is very large. However, social distancing makes it difficult to make decisions about measures that address their mitigation. The subject of this study, school food, has been addressed as a relevant issue and it is necessary to assess whether the measures taken for this purpose reflect the urgency to solve this problem.

Even before the pandemic, much research was carried out to assess the benefits of school meals upon the lives of students. Previous studies have already shown the positive effects of school feeding programs on the development of verbal fluency in malnourished children [13]. Additionally, Jomaa, McDonnell, and Probart [14] presented a bibliographic survey of articles published over the span of 20 years evaluating school feeding programs and, based on these articles, analyzed the impact of school feeding programs on the lives of children and adolescents. This research revealed a relative positive effect of school meals on student enrollment and dropout rates, when compared to students not covered by these programs.

In Latin America, the Food and Agriculture Organization of the United Nations (FAO) encourages countries to develop their school feeding programs. In the United States, there are at least two care programs aimed at vulnerable children, such as the School Nutrition Program, a school nutrition program aimed at offering free meals to children from needy families, and the Farmers Market Nutrition Program (FMNP), a special supplementary nutrition program for women, babies, and children. Another program of great relevance is the World Food Program (WFP), a worldwide initiative that serves about 17.3 million school children with meals and snacks [WFP].

Brazil counts on the PNAE (National School Feeding Program), a social program linked to the Education Ministry (implemented in 1955) that seeks to guarantee students enrolled in public schools and philanthropic entities an adequate and healthy meal. Other alternatives to promote nutrition for children and adolescents have been developed as well, such as micronutrient fortified cookies produced in Vietnam that, according to research, have reduced the prevalence of anemia and improved the status of iron intake [15].

3 School feeding programs during COVID-19

Without school feeding programs during the COVID-19 pandemic, thousands of children are subject to starvation. As of April, regarding strategies for the provision of school meals during this pandemic, of the approximately 197 countries with schools closed during this period, 10 of them have implemented programs for the transfer of cash rations to families, 47 are providing take-home food rations, 9 have placed programs on hold, and 16 are adopting mixed strategies [1]. However, the provision of food or other assistance to supply school meals does not guarantee that children are, in fact, being fed. [4].

In addition to Brazil, other countries that have also provided financial assistance to families include: the United States, through the Supplemental Nutritional Assistance Program (SNAP); Peru, with the transfer of cash rations through the Qali Warma National School Food Program; and many others. According to the WFP, at least 10 countries have adopted a strategy of transferring cash rations to family members in order to mitigate this problem. This is a measure that can be effective; however, other difficulties can be faced by families, such as bearing the costs of preparing food, which can be a difficult task under a scenario of high unemployment.

- Maintain flexibility and responsiveness to changes in the food supply and in the distribution and provision of nutrition services, while ensuring compliance with COVID-19 protocols.
- Use available resources to protect food and nutritional security for school children.

- Build upon existing welfare structures to cover vulnerable school children.
- Ensure that food and nutritional needs of vulnerable children are taken into account when designing any large-scale national response to COVID-19.
- Plan for the future reopening of schools, if possible, with specific benchmarks.

The expected duration of the pandemic is strongly related to the development of new drugs and a possible vaccine [16]. It is not yet clear how long schools will be closed as a measure to reduce or contain the contamination resulting from COVID-19, or if there will be episodes of intermittent opening and closing. This leads to a discussion of the sustainability and effectiveness of initiatives carried out. With regard to school feeding programs, the measures adopted need to be adapted to these scenarios.

For example, school closures in situations similar to the current pandemic were used during the H1N1 outbreak as a non-pharmaceutical containment measure [17], which, according to these authors, contributed to a decrease in the spread of the disease. However, in Brazil in 2009, only a few states postponed returning to classes by 15 days in the second semester of the academic year [18], with no extended school closures as in 2020.

Short-term harm to students' health as a result of missed meals during the pandemic may include fatigue and a reduced immune response, which makes children and adolescents more vulnerable to contracting infectious agents such as viruses, bacteria, etc., and consequently to developing diseases, which can worsen their condition because of a deficient immune response. In the long term, this harm can affect psychological, physical, and emotional development [19].

As mentioned, Federal Law 13,987/20 has the clear objective of guaranteeing the distribution of food to the families of students whose schools are closed. When the Law was enacted, the government of the Federal District opted for the distribution of food allowances to the parents of students from public schools¹⁴. However, little has been disclosed about the monitoring of this mitigation measure. Information regarding this initiative in the Federal District of Brazil can be found on the website of the State Bureau for Education of the Federal District (SEEDF) [20] and, as disclosed by this site, during the three phases of funds released, only 69,848 families are benefiting, or 106,435 students. No information was found regarding criteria for the distribution of food allowances or the percentage of families receiving benefits, in relation to the total number of students enrolled in the public school system of the Federal District. Still, even for those who receive government assistance, it is necessary to analyze its effectiveness in relation to the needs of children, in view of the nutritional requirements presented by schools, as these requirements cannot be guaranteed at home.

Chart 1 (Appendix 1) presents data on the benefits related to school meals provided by each of the Brazilian states and the Federal District to the families of students during the cessation of classes due to the pandemic, and available on the websites of the 27 State Departments of Education of each federated entity (retrieved between June 6 and June 8, 2020). We sought to identify the number of families and students receiving some type of benefit, the value and type of the benefit transferred, the form of transfer or delivery, and the eligibility criteria for such procedure.

It should be noted that most of the information presented in Chart 1 was found in press releases from the State Education Bureaus.

Despite the assistance provided to students, whether in the form of prepared meals, meal kits, or financial aid, some issues still need to be addressed, such as: the actual destination of the aid (whether the students will personally benefit from this assistance), the nutritional content and amount of food in the meal kits, and the difficulties that the family can face in receiving the benefit and preparing food.

4 Proposed model for monitoring, follow-up, and control

This work presents a proposed model for monitoring, accompanying, and controlling the financial aid benefits received by children and adolescents during the COVID-19 pandemic.

The model was outlined for the situation in Brazil, referencing the public policies adopted by that country and its social conditions. However, it is understood that it can also be used as a basis for other places to intervene in this process, in order to ensure that students receive adequate food during the pandemic.

In Brazil, the family health community agent (currently more than 200,000) is very common, whose role is to assist the poorest communities with the objective of promoting health surveillance, primary care and community health [21]. During this pandemic, these agents could monitor families and, regarding children and adolescents, contribute to the monitoring, not only of their health, but also of food intake. This monitoring could employ the use of telemedicine, and involve the following actors: families, schools, government, and health agents (Figure 2). The latter can be replaced by another actor, to be defined by the government, to fulfill this role.

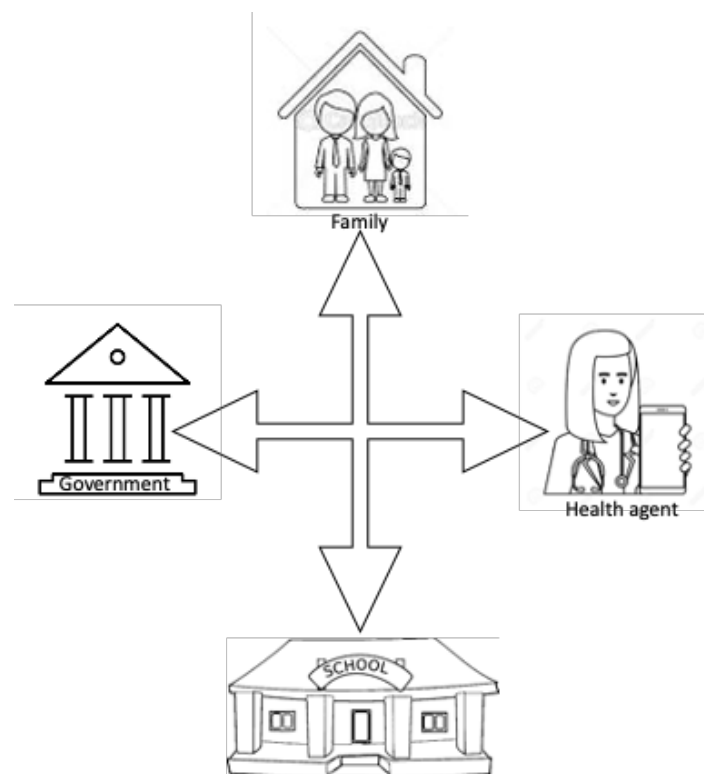


Figure 2. School feeding model during the COVID-19 pandemic.

The proposed monitoring needs to follow a checklist with issues to be observed within the family, in order to provide an understanding of the nutritional status of the child or adolescent.

At the same time, it's important to invest in geographic intelligence, aiming to map and monitor the areas of greatest vulnerability; locate all families that are linked to the receipt of benefits from this food program, and perform, through random selection, the verification of the effectiveness of this process, including the use of web applications to monitor and receive information from all those involved who are not receiving the aid. Registrations must follow the active surveillance model. The implementation of this model should provide sufficient data, in a timely manner, to support the government in understanding the effectiveness of the school feeding program during the pandemic, so that adjustments and adaptations can be made in favor of the students' nutritional requirements

5 Conclusions

In times of pandemic, children's nutrition is a crucial aspect to be discussed by society, given that, for many, school is the central point of daily support. Ensuring that food reaches children and is consumed by them is difficult for governments to monitor, since food or the financial aid to purchase it is delivered to families, and the lack of control over the correct distribution and use of this food makes it difficult to know its effectiveness in mitigating this problem.

Monitoring strategies need to be effective and family health agents could assist the government, using means similar to telemedicine, based on information provided by competent departments. Therefore, to contribute to the transparency of the use of public resources, it is necessary to develop research on the conditions throughout the Brazilian regions, and also to use of geographic intelligence tools that allow spatial monitoring, linked to active surveillance mechanisms, within the concept of participatory control of public funds, using information collection platforms to: know if the distribution of this benefits to families is effective and if children are receiving the food referred to in the Law and the PNAE; know what food is consumed by children and young people during this period and the number of meals eaten daily by them, with the help of family health agents; subsidize the government with information necessary to outline strategies for monitoring and following the diet of these children and adolescents during the pandemic.

In this way, it would be possible to contribute not only to the debates regarding the fulfillment of this role by the school, and aggravated by the pandemic, but also to know the effectiveness of public policies adopted during this period of emergency declared by the federal and state governments.

Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

* **Correspondence:** Dra. Ana Carla Bittencourt Reis, anacarlabr@unb.br

References

- [1] Global Monitoring of School Meals During COVID-19 School Closures. World Food Programme (WFP). (2020). <https://cdn.wfp.org/2020/school-feeding-map/index.html> [Accessed June 7, 2020]
- [2] Imai N, Cori A, Dorigatti I, Baguelin M, Donnelly C. A., Riley S, Ferguson N. M. Report 3: Transmissibility of 2019-nCoV. *Imperial College London* (2020). Available at: <https://fpmag.net/wp-content/uploads/2020/01/Imperial-2019-nCoV-transmissibility.pdf>
- [3] BRASIL. Ministério da Saúde. (2020). <https://www.saude.gov.br/noticias/agencia-saude/46435-brasil-confirma-primeiro-caso-de-novo-coronavirus> [Accessed Mai 14, 2020]
- [4] Mert Er. World Food Programme Insight. School feeding at home. (2020). <https://insight.wfp.org/school-feeding-at-home-95ff24a2c78> [Accessed June 03, 2020].
- [5] Pesquisadores associados. Observatório PrEpidemia. Relatório Técnico 01. Volta às aulas no Distrito Federal durante a pandemia de Covid-19. (2020) <https://www.prepidemia.org/notaserelatorios-tecnicos> [Accessed June 10, 2020].

- [6] Minussi, Bianca Baptisti, et al. “Grupos de risco do COVID-19: a possível relação entre o acometimento de adultos jovens “saudáveis” e a imunidade / COVID-19 risk groups: the possible relationship between the impairment of healthy young adults and immunity”. *Brazilian Journal of Health Review* (2020) 3.2: 3739-3762. <https://doi.org/10.34119/bjhrv3n2-200>
- [7] World Health Organization (WHO). Technical Report Series, 394, Healthy Diet. (2015). https://www.who.int/nutrition/publications/nutrientrequirements/healthydiet_factsheet394.pdf [Accessed June 09, 2020].
- [8] Lesley, D., Alice, W., Carmen, B., & Donald, B. (2016). *Global school feeding sourcebook: lessons from 14 countries*. Imperial College Press. Available at: <http://www.worldscientific.com/worldscibooks/10.1142/P1070>
- [9] United Nations World Food Programme (WFP). (2020). <https://www.wfp.org/> [Accessed May 10, 2020].
- [10] School feeding in times of COVID-19. What can governments do? (2020). https://centrodeexcelencia.org.br/wp-content/uploads/2020/04/SchoolFeedingCOVID_EN.pdf [Accessed May 10, 2020].
- [11] Mitigating the effects of the COVID-19 pandemic on food and nutrition of schoolchildren. (2020). <https://www.unicef.org/media/68291/file/Mitigating-the-Effects-of-the-COVID-19-Pandemic-on-Food-and-Nutrition-of-school-children.pdf> [Accessed May 10, 2020].
- [12] BRASIL, Law n° 13.987 de 7 de abril de 2020. http://www.planalto.gov.br/ccivil_03/_ato2019-2022/2020/lei/113987.htm [Accessed June 05, 2020]
- [13] Ann-Marie K. Chandler, Susan P. Walker, Kevin Connolly, Sally M. Grantham-McGregor, School Breakfast Improves Verbal Fluency in Undernourished Jamaican Children, *The Journal of Nutrition* (1995)125:4, 894–900, <https://doi.org/10.1093/jn/125.4.894>
- [14] Lamis H Jomaa, Elaine McDonnell, Claudia Probart, School feeding programs in developing countries: impacts on children's health and educational outcomes, *Nutrition Reviews* (2011) 69:2, 83–98, <https://doi.org/10.1111/j.1753-4887.2010.00369.x>
- [15] Hieu, N., Sandalinas, F., De Sesmaisons, A., Lailou, A., Tam, N., Khan, N., . . . Berger, J. Multi-micronutrient-fortified biscuits decreased the prevalence of anaemia and improved iron status, whereas weekly iron supplementation only improved iron status in Vietnamese school children. *British Journal of Nutrition* (2012) 108:8, 1419-1427. <https://doi.org/10.1017/S0007114511006945>
- [16] Food in a time of COVID-19. *Nature plants*, (2020) 6:5, 429. <https://doi.org/10.1038/s41477-020-0682-7>
- [17] Wu, Joseph T et al. “School closure and mitigation of pandemic (H1N1) 2009, Hong Kong.” *Emerging infectious diseases*. (2010) 16:3, 538-41. <https://doi.org/10.3201/eid1603.091216>
- [18] Niconiello, B. Gripe suína na escola (2019) <https://sites.google.com/site/agestaoeducacional/artigo/h1n1> [Accessed April 30, 2020].

[19] Dunn CG, Kenney E, Fleischhacker SE, Bleich SN. Feeding Low-Income Children during the COVID-19 Pandemic. *N Engl J Med.* (2020) 382:18, e40. <https://www.nejm.org/doi/full/10.1056/NEJMp2005638>

[20] Secretaria de Estado de Educação (2020) <http://www.se.df.gov.br/bolsa-alimentacao-2/> [Accessed June5, 2020].

[21] Ministério da Saúde. O trabalho do agente comunitário de saúde. (2009). Available at: http://189.28.128.100/dab/docs/publicacoes/geral/manual_acs.pdf.