

Food (in)security in Brazil in the context of the SARS-CoV-2 pandemic

(In)Segurança alimentar no contexto da pandemia por SARS-CoV-2

(In)Seguridad alimentaria en el contexto de la pandemia por SARS-CoV-2

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The international spread of the new coronavirus called SARS-CoV-2 has led interruption of the population's daily activities, due to the need for social distancing in order to slow the dissemination of the disease, which has reached 190 countries in four months, including Brazil ¹. The main signs and symptoms of the virus are fever, cough, and difficulty breathing ². Gastrointestinal symptoms such as diarrhea, vomiting and abdominal pain have also been reported for COVID-19, as well as infections with other coronaviruses ³. Transmission is generally airborne or by person-to-person contact, through droplets of saliva, sneezes, coughs, and secretions that can contaminate hands and surfaces ².

In the attempt to slow the virus's spread, the World Health Organization (WHO) and the main health agencies in Brazil have recommended that individuals practice hand hygiene, cover the mouth with the bent elbow or tissue when coughing or sneezing, avoid crowds, and maintain home isolation for 14 days in case of disease symptoms ⁴. People are also encouraged to remain in well-ventilated environments ⁵, and companies and public institutions are urged to consider home office work, online meetings, and travel curtailment.

In Brazil, efforts in this initial stage of the epidemic have focused on confronting SARS-CoV-2, especially avoiding its spread ⁶ while allowing healthcare for serious cases. However, another emerging side of the epidemic involves food security. Italy, Spain, and Portugal, already under quarantine, have developed initiatives to avoid crowding that have impacted the food chain. In these countries, most restaurants and bars are closed, and supermarkets have adopted rules for access and purchase of food products in order to avoid shortages.

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Security: from health-hygiene control to food consumption

Although Brazil is experiencing the pandemic's initial effects, the discussion on the country's food security situation and its interfaces is of the utmost urgency, based on what has already happened in Europe. The food industry is facing numerous uncertainties, with limited orientation on food production, distribution, marketing, or home preparation of meals.

The Ministry of Health has led the initial communication of preventive measures for the population, based primarily on WHO guidelines. In parallel, Brazil's states and municipalities (counties) are



attempting to buffer the disease's effects by issuing complementary decrees to those of the federal government, based on local and regional geographic, economic, social, and health characteristics, among others. Basically, the actions by states and municipalities are based on dispersing crowds and encouraging social distancing, given the high transmissibility of SARS-CoV-2 ⁷.

At the institutional level, establishments that produce meals and serve healthy individuals, such as company workers and students (daycare centers, schools, and universities) have reduced or suspended such services. Meanwhile, food companies that serve hospitals and long-stay institutions for the elderly have been challenged to produce on a larger scale in the former and focus heightened attention on health and hygiene issues due to the users' vulnerability in both cases. The Brazilian Federal Board of Nutritionists has issued recommendations on good practices for work by nutritionists and nutrition and dietary technicians ⁸ in order to fill gaps left by the lack of capillarity in the Health Surveillance System on collective nutrition throughout the country.

In order to adopt measures to reduce the risk of a breakdown in food supply services, the Rio de Janeiro State Government issued *Ruling PRESI/CEASA-RJ n. 17* on March 16, creating the Emergency Program for Prevention of Contamination. The measure requires adherence to the program and reporting by all companies that directly or indirectly provide services to the Central Produce Warehouses, especially those that produce and supply foods and that market food produce, provide services, and use the Central Produce Warehouse. The measures include avoiding person-to-person contact between workers, prioritizing the use of communication technologies; taking meals at the workstation itself; limiting workers' presence in the company headquarters; and reporting suspected cases of COVID-19 ⁹.

On March 14, the Federal District determined a distance of two meters between tables at restaurants and similar establishments ¹⁰. Rio de Janeiro, through *Decree n. 46,973* on March 16, limited the occupancy of restaurants and food courts to 30%, while maintaining normal takeout and delivery services ¹¹. As the number of COVID-19 cases increases, new strategies are implemented, but these changes have not kept pace with the spread of the disease. For example, in ten days São Paulo issued six decrees ¹², in addition to announcing a state of public calamity by adopting temporary emergency measures for prevention of the virus's transmission.

As of March 23, the rulings have led to the closing of numerous restaurants and public food services and the migration of others to takeout and delivery services. The main focus of the adaptation by these services has been the survival of this economic sector during the crisis. These companies are attempting to maintain their fixed costs such as salaries and rent, besides optimizing their variable costs. However, this adaptation may be insufficient to contain a predicted cut of three million jobs in this sector in the next 40 days, according to the Brazilian Association of Bars and Restaurants (ABRASEL) ¹³. The Association has proven sensitive to the problem and has intermediated negotiations with the government and food delivery companies that operate via online orders ¹⁴, besides publishing guidelines for company owners concerning hygiene care in delivery services ¹⁵. On the one hand, home delivery has proven to be a feasible solution for minimizing the food sector's crisis in large cities, but on the other, considering Brazil's socioeconomic and territorial differences, this technology is not accessible to the entire population. Increasingly precarious work conditions in recent years, including activities performed online, have increased the vulnerability of delivery persons, now placing them on the front line of exposure to SARS-CoV-2.

Due to social distancing, Brazilians without access to home delivery prepare their meals at home. These people need to purchase food, personal care items, and home cleaning materials, but trips to the supermarket become a risk factor if such establishments are not prepared to meet the emerging demand. Alert to these trends, the Brazilian Association of Supermarkets launched a pamphlet ¹⁶ with strategies to decrease the risk of infection, emphasizing the need for sanitization of parking meters, supermarket carts and baskets, points of intense and repetitive contact such as door handles, door knobs, and handrails, payment terminals, ATMs, and elevators. The pamphlet also emphasizes the need for public dispensers of hand sanitizer at the entrance to food markets and soap and paper towels in the restrooms. Large supermarket chains are also issuing information on access to their stores, limiting the number of customers inside the establishment and reserving special store hours for the elderly.

Notwithstanding the (dis)organization of information, it does not reach the supermarket employees or consumers to the extent that it should. Images posted on social media show chaotic situations in these establishments: workers without personal protective equipment (whether due to employers' difficulty in systematically organizing the routine imposed by the pandemic or complete ignorance of the necessary precautions); crowding and panic shopping in the stores; and hoarding of products. Such situations could lead to the total collapse of the structure for containing the virus and early shortages in the food industry.

Another issue related to access to and preparation of meals is the possibility of contamination via contact with inanimate surfaces. Studies have shown that plastic, metal, glass, and paper can be vehicles for transmission of the coronavirus^{17,18}. Thus, food packaging should be cleaned with soap and water, 70% alcohol, or 0.1% sodium hypochlorite solution¹⁸, according to availability in the household. For the food products themselves, good hygiene with well-established practices is necessary, because the largest share of foodborne disease outbreaks occurs in households¹⁹. Foods should be cooked adequately (reaching 70°C in all its parts), and foods consumed raw should first be washed and sanitized⁸ with 0.1% sodium hypochlorite solution¹⁸ and then rinsed with clean water. Importantly, handling objects such as cellphones during meals increases the risk of contamination during ingestion of the foods²⁰. One important aspect still not mentioned in the recommendations published thus far refers to the reuse of supermarket bags to transport ready-to-eat foods. This practice should be avoided, since these bags are vehicles for contamination²¹.

Given the lack of information on precautions during sanitization, workers at some public universities are producing bulletins posted on social media to orient the population. One of these online items discusses recommendations for the use of sanitizing substances for the prevention of COVID-19, based on a recent coronavirus study²². Another post deals with a pamphlet on nutritional care for dealing with SARS-CoV-2²³. Based on the *Dietary Guidelines for the Brazilian Population*, the readers find simple language with orientation on personal hygiene, food items, meal preparation environment, and preference for natural foods versus processed and ultra-processed foods. The document also highlights the importance of critical assessment of the information, myths, and advertising posted on social media, which sometimes flaunt "miraculous" solutions with no scientific basis.

The Food Industry Association²⁴ published two documents with recommendations for company owners, serving to orient their employees on environmental and personal hygiene. The documents highlight the need for employee training on adequate cleaning and disinfection of surfaces, use of personal protective equipment, and hygiene products and the risks involved in their use. The documents further emphasize the need for training on COVID-19 symptoms and orientation in case of infection.

Industry's attention to the disease is due to the fact that in crisis situations, the demand for storable products tends to increase, which requires huge logistic planning. In the attempt to protect against possible shortages, the population tends to purchase more processed and ultra-processed foods, which are less perishable, practical, more accessible, and sometimes less costly than fresh foods. Still, access to a balanced diet is indispensable for confronting the disease. Food security should thus be analyzed beyond the immediate health and hygiene issues.

The trend towards a global economic recession is impacting everyone, but it particularly aggravates the health of more socioeconomically vulnerable groups, especially those living in risk areas that comprise the mass of unemployed and underemployed Brazilians. Two major lines of action should be considered for this population:

- (i) Living in risk areas with crowded, substandard housing and low coverage of running water and sewage disposal, among other adverse factors, hinders the adoption of personal and collective hygiene measures for the control of COVID-19. According to a study by the Brazilian Institute of Geography and Statistics, in 2017 only 38.2% of Brazil's municipalities (counties) had a Municipal Plan for Basic Sanitation. A comparison of the country's major geographic regions reveals major disparities. Only 18.6% of the municipalities in Northeast Brazil reported having a sanitation policy, compared to 63.7% in the South²⁵. In Brazil as whole, the coverage of running water supply was 83.6% in 2018, while the coverage of sewage disposal was 53.2%²⁶;
- (ii) Shelter-at-home measures have already affected informal workers' income, and in the very short time it will also impact wage-earners, due to the risk of layoffs and/or reduction in the workday, resulting in a drop in their earnings. The undermining of employment relations was already under

way in the context of Brazil's on-going economic crisis, but it has been exacerbated by the pandemic. The number of persons that are invisible to social policies, especially the homeless population, tends to increase, but measures that already failed to ensure the right to health ²⁷ will have to be rethought as a way of protecting Brazilian society as a whole against the new coronavirus.

The disconnection and weakening of important forums for the dialogue on food and nutritional security, such as Brazil's recently extinguished National Food Security Council, shows how difficult our path is. The country's preexisting food insecurity tends to be accelerated by SARS-CoV-2. We thus need to reassess the measures that allocate more than 70% of farm credit to corporate agricultural production, targeted to the production of commodities, and focus on family farming, which is better distributed geographically (allowing local produce supply), produces diversified foods, occupies more than 80% of rural workers, and employs more sustainable farming practices ²⁸. Alternative food networks ²⁹ can optimize access to fresh and healthy foods during the pandemic. The documents consulted here failed to mention the possibility of adapting open-air food markets, thus overloading the supermarkets and further weakening the food crop system.

Thus far, Brazil has witnessed a disconnect between the different government decision-making spheres. Foundations, councils, public universities, and associations have produced educational materials, but the reach of these materials is still not known. The scenario is complex and dynamic and demands that the public and private sectors and the population take aligned action to deal with COVID-19, without overlooking the various dimensions of food insecurity. It is indispensable for mitigation measures against the spread of SARS-CoV-2 to be rethought in the coming days. This article has provided an overview of information available up to March 23, 2020.

Contributors

All authors contributed to the conception, writing, and revision of the article.

Additional informations

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References

1. World Health Organization. Coronavirus disease (COVID-19) pandemic. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019> (accessed on 19/Mar/2020).
2. Ministério da Saúde. Coronavírus: sobre a doença. <http://coronavirus.saude.gov.br/sobre-a-doenca#transmissao> (accessed on 19/Mar/2020).
3. Assiri A, Al-Tawfiq JA, Al-Rabeeh AA, Al-Rabiah FA, Al-Hajjar S, Al-Barrak A, et al. Epidemiological, demographic, and clinical characteristics of 47 cases of Middle East respiratory syndrome coronavirus disease from Saudi Arabia: a descriptive study. *Lancet Infect Dis* 2013; 13:752-61.
4. World Health Organization. Coronavirus disease (COVID-19) advice for the public. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public> (accessed on 19/Mar/2020).
5. Agência Nacional de Saúde Suplementar. Coronavírus (COVID-19): confira informações e saiba como se prevenir. <http://www.ans.gov.br/aans/noticias-ans/consumidor/5344-coronavirus-confira-informacoes-e-saiba-como-se-prevenir> (accessed on 19/Mar/2020).
6. Lana RM, Coelho FC, Gomes MFC, Cruz OG, Bastos LS, Villela DAM, et al. Emergência do novo coronavírus (SARS-CoV-2) e o papel de uma vigilância nacional em saúde oportuna e efetiva. *Cad Saúde Pública* 2020; 36:e00019620.
7. Weston S, Frieman MB. COVID-19: knowns, unknowns, and questions. *mSphere* 2020; 5:e00203-20.
8. Conselho Federal de Nutricionistas. Recomendações do CFN: boas práticas para atuação do nutricionista e do técnico em nutrição e dietética durante a pandemia de coronavírus. https://www.cfn.org.br/wp-content/uploads/2020/03/nota_coronavirus_3-1.pdf (accessed on 22/Mar/2020).
9. Secretaria de Estado de Agricultura, Pecuária, Pesca e Abastecimento. Portaria PRESI/CEA-SA-RJ nº 17, de 16 de março de 2020. Estabelece os procedimentos básicos de prevenção de contágio, também em razão do coronavírus (covid19), mediante a continuidade dos serviços essenciais com a instituição do homeoffice. *Diário Oficial do Estado do Rio de Janeiro* 2020; 18 mar.
10. Distrito Federal. Decreto nº 40.520, de 14 de março de 2020. Dispõe sobre as medidas para enfrentamento da emergência de saúde pública de importância internacional decorrente do novo coronavírus, e dá outras providências. *Diário Oficial do Distrito Federal* 2020; 14 mar.
11. Rio de Janeiro. Decreto nº 46.973, de 16 de março de 2020. Reconhece a situação de emergência na saúde pública do Estado do Rio de Janeiro em razão do contágio e adota medidas de enfrentamento da propagação decorrente do novo coronavírus (COVID-19); e dá outras providências. *Diário Oficial do Estado do Rio de Janeiro* 2020; 17 mar.

12. Decretos do Governo de SP com medidas de prevenção e combate ao novo coronavírus. SP Notícias 2020; 26 mar. <https://www.saopaulo.sp.gov.br/spnoticias/decretos-do-governo-de-sp-com-medidas-de-prevencao-e-combate-ao-novo-coronavirus/>.
13. Associação Brasileira de Bares e Restaurantes. Bares e restaurantes estimam cortar três milhões de vagas em 40 dias. <https://mg.abrasel.com.br/noticias/noticias/bares-e-restaurantes-estimam-cortar-tres-milhoes-de-vagas-em-40-dias/> (accessed on 21/Mar/2020).
14. Associação Brasileira de Bares e Restaurantes. Abrasel fecha acordo com iFood: prazo de pagamento para bares e restaurantes será reduzido. <https://abrasel.com.br/noticias/noticias/abrasel-fecha-acordo-com-ifood-prazo-de-pagamento-para-bares-e-restaurantes-sera-reduzido/> (accessed on 21/Mar/2020).
15. Associação Brasileira de Bares e Restaurantes. Cuidados de higiene no delivery para bares e restaurantes na crise do novo coronavírus. <https://drive.google.com/file/d/1u3vSZDLAqDJeVTLROp5WM5WcTED1tpKV/view> (accessed on 21/Mar/2020).
16. Associação Brasileira de Supermercados. Boas práticas para prevenção de Coronavírus (COVID-19) nos supermercados. http://static.abras.com.br/pdf/cartilha_covid.pdf (accessed on 21/Mar/2020).
17. van Doremalen N, Bushmaker T, Morris D, Holbrook M, Gamble A, Williamson B, et al. Aerosol and surface stability of HCoV-19 (SARS-CoV-2) compared to SARS-CoV-1. *medRxiv* 2020; 9 mar. <https://www.medrxiv.org/content/10.1101/2020.03.09.20033217v2>.
18. Kampf G, Todt D, Pfaender S, Steinmann E. Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents. *J Hosp Infect* 2020; 104:246-51.
19. Ministério da Saúde. Surtos de doenças transmitidas por alimentos no Brasil. <https://portalquivos2.saude.gov.br/images/pdf/2018/janeiro/17/Apresentacao-Surtos-DTA-2018.pdf> (accessed on 19/Mar/2020).
20. Cunha CBC, Moraes FR, Monteiro VS, Feitosa FGMA, Silva ITC. Microbiological evaluation of the cell phones of the professionals of a Surgical Center in a beneficent Hospital. *J Epidemiol Infect Control* 2016; 6:120-4.
21. Repp KK, Keene WE. A point-source norovirus outbreak caused by exposure to fomites. *J Infect Dis* 2012; 205:1639-41.
22. Escola de Nutrição, Universidade Federal de Ouro Preto. Como limpar mãos, ambientes e utensílios para prevenção do coronavírus (COVID-19). <https://enut.ufop.br/news/cartilha-de-orientacao-sobre-o-coronavirus> (accessed on 27/Mar/2020).
23. Moraes AHA, Maia JKS, Damasceno KSFSC, Seabra LMJ, Passos TS. Orientações Nutricionais para o enfrentamento do COVID-19. Universidade Federal do Rio Grande do Norte. https://www.asbran.org.br/storage/arquivos/CARTILHA_COVID_19%20final.pdf (accessed on 27/Mar/2020).
24. The Food Industry Association. Coronavirus resources. <https://www.fmi.org/food-safety/coronavirus> (accessed on 21/Mar/2020).
25. Instituto Brasileiro de Geografia e Estatística. Perfil dos municípios brasileiros. Saneamento básico: aspectos gerais da gestão da política de saneamento básico: 2017. Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística; 2018.
26. Secretaria Nacional de Saneamento, Ministério do Desenvolvimento Regional. Sistema Nacional de Informações sobre Saneamento: 24º Diagnóstico dos Serviços de Água e Esgotos. http://www.snis.gov.br/downloads/diagnosticos/ae/2018/Diagnostico_AE2018.pdf (accessed on 23/Mar/2020).
27. Paiva IKS, Lira CDG, Justino JMR, Miranda MGO, Saraiva AKM. Direito à saúde da população em situação de rua: reflexões sobre a problemática. *Ciênc Saúde Colet* 2016; 21:2595-606.
28. Olalde AR. Agricultura familiar e desenvolvimento sustentável. <http://www.ceplac.gov.br/radar/Artigos/artigo3.htm> (accessed on 21/Mar/2020).
29. Darolt MR, Lamine C, Brandenburg A, Alencar MCF, Abreu LS. Redes alimentares alternativas e novas relações produção-consumo na França e no Brasil. *Ambiente & Sociedade* 2016; 19:1-22.

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