

COVID-19 and the digital food environment in Brazil: reflections on the pandemic's influence on the use of food delivery apps

COVID-19 e ambiente alimentar digital no Brasil: reflexões sobre a influência da pandemia no uso de aplicativos de *delivery* de comida

COVID-19 y ambiente alimentario digital en Brasil: reflexiones sobre la influencia de la pandemia en el uso de aplicaciones de entrega de comida

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COVID-19 is an infectious disease caused by the recently discovered SARS-CoV-2, for which there is still no vaccine or provenly effective treatment¹. Considering that the novel coronavirus has high transmissibility and that transmission occurs through close personal contact or contact with contaminated surfaces², physical distancing is the best available strategy to curtail its spread. Thus, since community transmission of COVID-19 was declared in Brazil, non-essential economic activities were suspended and essential activities had to adopt specific rules for functioning³.

As of this writing, there was no evidence that the numbers of cases and deaths were decreasing in the country. Nevertheless, government initiatives to relax social distancing were making inroads in various states and municipalities, loosening the previously adopted economic restrictions¹.

In-person service in food establishments away from home has been banned or limited by decrees or ordinances during most of the time since the pandemic's onset^{4,5}. As a result, bars, restaurants, snack bars, and similar food services adopted or stepped up their presence in the digital environment, especially with food delivery apps (in this article we simplify this term to designate delivery services for foods and beverages that are ready to consume, that is, that dispense with any stage of preparation by the consumer)⁶. Meanwhile, customers interested in food prepared away from home also began to rely more on delivery and takeaway services via these apps^{7,8}.

For the reasons just mentioned, social distancing during the COVID-19 pandemic may be contributing to the expansion of food delivery app use in Brazil. Thus, based on this moment in the health crisis, it is important to reflect on the possible repercussions for health and nutrition from the more widespread practice of purchasing food online.

Food delivery and consumers' health

Delivery apps are part of the digital food environment⁹, as convenient channels for online purchases¹⁰. This expands the possibilities for food purchases, improving the availability and accessibility of foods prepared away from home¹¹. Still, consumers' health can be affected negatively, since the nutritional composition of foods and beverages available on such platforms must be similar to those in physical establishments¹². Since eating out is part of Brazilians' diet and the nutritional profile is

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high in calories and low in nutrients¹³, food purchases via apps may contribute to the consumption of unhealthy foods and to the development of associated chronic noncommunicable diseases¹².

According to a study in Belo Horizonte (Minas Gerais State, Brazil), some 80% of food establishments using the two most widely used apps were selling ultra-processed beverages, 38% were selling ultra-processed snacks, and 33% were selling ice cream products. Meanwhile, only 16% marketed meals that predominantly contained vegetables and greens, and only 4% sold fruits or fruit-based preparations (unpublished observations)¹⁴. It is also known that foods based on ultra-processed foods, such as pizzas, hamburgers, and other kinds of snacks are among the most frequently ordered categories on the online platforms^{15,16}. Thus, the food delivery digital environment can be understood as a food swamp¹⁷. After all, since it does not depend on physical distance between the food establishments and the customers, it concentrates a higher proportion of points of sale for unhealthy compared to healthy foods.

Another key factor is that the dynamics of online food choices differ from the experience of food purchases at in-person establishments. For example, studies on the online purchase of supermarket items suggest a decrease in the acquisition of unhealthy foods on impulse, but also evidence of hesitation in the purchase of fresh foods¹⁸. Despite the scarcity of similar studies that analyze the online purchase of ready-to-eat food, food apps display features that can channel consumers to unhealthy foods. Their interface simulates a food court in which certain choices may seem more attractive due to the illustrations, promos, combos, free delivery, and especially algorithmic programming that highlights foods and promos based on previous purchases and on what persons with similar profiles are inclined to order.

Intensification of food delivery app use during the pandemic

Growing access to internet and smart mobile devices and a more widespread digital culture are contributing factors to the popularization of food delivery apps in Brazil¹⁰. The 26.6 million orders delivered in November 2019 by iFood, the market leader in Latin America, illustrate this expansion¹⁹.

According to Bezerra et al.¹³, the eating-out rate in Brazil correlates positively with income and negatively with age. The proportion of food delivery app users is also higher in young adults, in socioeconomic classes A and B (60%), and in the region with the highest income concentration, the Southeast (61%)²⁰. In addition, in state capitals and metropolitan areas, online delivery includes a considerably higher market share (39.5%) when compared to the countryside (6.9%)¹⁶.

The current moment of physical distancing may be catalyzing the adoption of food delivery in cities where this option is available, because as long as the food services follow health and hygiene guidelines²¹, this technological solution is safer than eating out. Thus, more Brazilians may be opting to receive food at home. The apps have thus invested in such strategies as discounts, promos, and free delivery during the pandemic⁶.

The delivery companies have not disclosed the consolidated data on the pandemic's impact on their sales. However, iFood, for example, confirmed an increase in the demand for delivery along with the spread of COVID-19. That is, the demand began in São Paulo and Rio de Janeiro, reached the other states, and then spread across the countryside. Customers also began to purchase larger amounts per order, more frequently, and at different moments than the normal peak purchasing hours. This includes breakfast, afternoon snacks, and lunch; in this case, one important explanation is the possibility of payment with food allowance cards⁸.

Although average users of food delivery apps have a privileged socioeconomic profile compared to Brazil's general population, the questions posed here are not limited to persons with higher purchasing power. Even before the pandemic, food delivery companies were investing in measures to diversify their customer base, such as the program that digitized the *prato feito* (literally "done dish", a staple Brazilian lunch usually consisting of rice, beans, an economic meat or poultry serving, and a serving of vegetables) in 40 Brazilian cities, delivering *marmitas* (disposable *prato feito* lunch pails) with prices starting at BRL 10.00 (or about USD 2.00). In addition to the increase in sales, this initiative aimed to attract more customers from economic classes C and D²².

The food delivery industry also adopted similar strategies to those already used by the food industry to expand the ultra-processed food market in the low and middle-income population²³. Such strategies include raising multimillion-dollar investments, acquisition of smaller companies in other countries, and heavy investment in advertising²⁴. Thus, like the intensification of ultra-processed food purchases by the lower-income population²⁵, it is possible that lower socioeconomic classes may also start to purchase food more often in the digital environment.

In the current context, the attraction and retention of customers that were not using delivery platforms regularly are reaching audiences with different profiles from the habitual, including older persons, one of the key risk groups for COVID-19, who may be experimenting with online food purchases⁷.

Final remarks

Measures have been defended in the field of public health nutrition that discourage the consumption of ultra-processed foods, such as front-of-package warnings, increased taxes on sugary beverages, and regulation of food advertising and environments²⁶. However, despite the food delivery industry's rapid growth, which may be propelled in the pandemic's context, there are still no proposals for specific measures to encourage purchase of meals based on natural or minimally processed foods and to discourage the purchase of foods based on ultra-processed products.

In this sense, the adoption of some interventions could protect health. For example, banning food deliveries to schools, surtaxes on combos sold at lower prices than the sum of their components and large servings whose prices represent an economic advantage over the purchase of smaller servings, regulating the use of push algorithms, and regulating the use of food allowance cards from the Workers' Food Program.

The food delivery industry will probably emerge stronger from the health crisis, and online food purchasing, especially via apps, may be part of many Brazilians' daily routine after the pandemic. Although it is beyond the scope of this article, this highlights the need for greater attention to various public health aspects interrelated to this phenomenon, such as delivery workers' labor rights and the environmental impact of disposable packaging to transport meals. As for consumers' health, we emphasize the need for studies on food purchasing practices via apps in order to identify potential nutritional impacts, as well as to define and support priority measures to promote adequate and healthy eating via this digital channel.

Contributors

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References

- Rafaell RMR, Neto M, Carvalho MMB, David HMSL, Acioli S, Faria MGA. Epidemiologia, políticas públicas e pandemia de Covid-19: o que esperar no Brasil? *Rev Enferm UERJ* 2020; 28:e49570.
- World Health Organization. Q&A on coronaviruses (COVID-19). <https://www.who.int/news-room/q-a-detail/q-a-coronaviruses> (accessed on 23/May/2020).
- Brasil. Decreto nº 10.282, de 20 de março de 2020. Regulamenta a Lei nº 13.979, de 6 de fevereiro de 2020, para definir os serviços públicos e as atividades essenciais. *Diário Oficial da União* 2020; 20 mar.
- 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/>.
- Rio de Janeiro. Decreto nº 47.102, de 1º de junho de 2020. Dispõe sobre as medidas de enfrentamento da propagação do novo coronavírus (COVID-19), em decorrência da situação de emergência em saúde, e dá outras providências. *Diário Oficial do Estado do Rio de Janeiro* 2020; 2 jun.
- Soupin E. Com cariocas de quarentena, pedidos de delivery disparam no Rio. *G1* 2020; 19 mar. <https://g1.globo.com/rj/rio-de-janeiro/noticia/2020/03/19/com-cariocas-de-quarentena-pedidos-de-delivery-disparam-no-rio.ghtml>.
- 99 Food. Serviço ganha novos públicos e ajuda a manter bares e restaurantes em operação durante a pandemia. *Gazeta do Povo* 2020; 29 apr. <https://www.gazetadopovo.com.br/conteudo-publicitario/99-food/servico-ganha-novos-publicos-e-ajuda-a-manter-bares-e-restaurantes-em-operacao-durante-a-pandemia/>.
- Frabasil D, Campos E, Buldrini R. Coronavírus: como o iFood está lidando com o aumento da demanda por delivery. *Época Negócios* 2020; 3 apr. <https://epocanegocios.globo.com/Startup/noticia/2020/04/coronavirus-como-o-ifood-esta-lidando-com-o-aumento-da-demanda-por-delivery.html>.
- Granheim SI. The digital food environment. *UNSCN Nutrition* 2019; 44:116-21.
- Pigatto G, Machado JGCF, Negreti AS, Machado LM. Have you chosen your request? Analysis of online food delivery companies in Brazil. *Br Food J* 2017; 119:639-57.
- Maimaiti M, Zhao X, Jia M, Ru Y, Zhu S. How we eat determines what we become: opportunities and challenges brought by food delivery industry in a changing world in China. *Eur J Clin Nutr* 2018; 72:1282-6.
- Keeble M, Adams J, Sacks G, Vanderlee L, White CM, Hammond D, et al. Use of online food delivery services to order food prepared away-from-home and associated sociodemographic characteristics: a cross-sectional, multi-country analysis. *Int J Environ Res Public Health* 2020; 17:5190.

13. Bezerra IN, Souza AM, Pereira RA, Sichieri R. Consumo de alimentos fora do domicílio no Brasil. *Rev Saúde Pública* 2013; 47 Suppl 1:200s-11.
14. Horta PM, Souza JPM, Rocha LL, Mendes LL. Digital food environment of a Brazilian metropolis: food availability and marketing strategies used by delivery apps. *Public Health Nutr* 2020; (Online ahead of print).
15. iFood; Box 1824. A revolução da alimentação na era digital. <https://revolucaodelivery.ifood.com.br/#/> (accessed on 14/May/2019).
16. Delivery Much. Diagnóstico do delivery de comida no interior do Brasil em 2018. <https://blog.deliverymuch.com.br/delivery-much-franquia/> (accessed on 24/May/2020).
17. Mui Y, Jones-Smith J, Thornton R, Porter KP, Gittelsohn J. Relationships between vacant homes and food swamps: a longitudinal study of an urban food environment. *Int J Environ Res Public Health* 2017; 14:1426.
18. Pitts SBJ, Ng SW, Blitstein JL, Gustafson A, Niculescu M. Online grocery shopping: promise and pitfalls for healthier food and beverage purchases. *Public Health Nutr* 2018; 21:3360-76.
19. iFood chega a 26,6 milhões de pedidos no mês de novembro. *E-Commerce Brasil* 2019; 16 dez. <https://www.ecommercebrasil.com.br/noticias/ifood-chega-a-266-milhoes-de-pedidos-no-mes-de-novembro/> (accessed on 30/Jul/2020).
20. Instituto Qualibest. Consumo de comida delivery por aplicativo. <https://www.institutoqualibest.com/download/uso-de-apps-de-delivery-de-comida/> (accessed on 24/May/2020).
21. 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 24/May/2020).
22. Wolf G. iFood Loop: como a startup de refeições quer 'digitalizar o PF'. *O Estado de S. Paulo* 2020; 29 jan. <https://link.estadao.com.br/noticias/inovacao,ifood-loop-como-a-startup-de-refeicoes-quer-digitalizar-o-pf,70003176441>.
23. Monteiro CA, Cannon G. The impact of transnational "Big Food" companies on the South: a view from Brazil. *PLoS Med* 2012; 9:e1001252.
24. Bertão N. Com apetite de unicórnio, iFood quer se reinventar. *Exame* 2017; 14 dec. <https://exame.com/revista-exame/com-apetite-de-unicornio/>.
25. Instituto Brasileiro de Geografia e Estatística. POF 2017-2018: alimentos frescos e preparações culinárias predominam no padrão alimentar nacional. Agência IBGE Notícias 2020; 3 apr. <https://agenciadenoticias.ibge.gov.br/agencia-sala-de-imprensa/2013-agencia-de-noticias/releases/27298-pof-2017-2018-alimentos-frescos-e-preparacoes-culinarias-predominam-no-padrao-alimentar-nacional>.
26. Swinburn BA, Kraak VI, Allender S, Atkins VJ, Baker PI, Bogard JR, et al. The global syndemic of obesity, undernutrition, and climate change: the Lancet Commission report. *Lancet* 2019; 393:791-846.

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