Characteristics of food establishments registered with a meal delivery app in Latin America

Juliana de Paula Matos, Karen Carolina Martins Julião and Paula Martins Horta*

Departamento de Nutrição, Universidade Federal de Minas Gerais (UFMG), Av. Alfredo Balena 190, 30130-100 Belo Horizonte, MG, Brazil

Abstract

Numerous studies have characterised the establishments registered with meal delivery apps (MDA) in several countries. However, little evidence is available regarding these platforms in Latin America (LA). The purpose of this study is to characterise food establishments registered with an MDA in nine LA cities. The establishments (*n* 3339) were characterised by the following keyword groups: 'Typical cuisine', 'Meat and fish', 'Snacks', 'Breakfast', 'Desserts' and 'Healthy'. In addition, we identified the marketing strategies present in the establishments' advertisements: photos, discounts and free delivery. Mexico City had the highest number of establishments registered with MDA (773), followed by Bogotá (655), Buenos Aires (567) and São Paulo (454). There is a direct relationship between the number of inhabitants of the cities and the number of the registered establishments. 'Snacks' was the keyword group most used by establishments in five of the nine cities. Establishments in two cities were most often characterised by the terms 'Typical cuisine' (Mexico City and Santiago de Chile) and 'Meats and fish' (Quito and San Jose). Photos were present in the advertisements of at least 84·0 % of the establishments. In addition, at least 40 % of establishments in Montevideo, Bogotá, São Paulo, Lima and Santiago de Chile offered discounts. Free delivery was present in at least 50 % of establishments in Quito, San Jose, Mexico City, Santiago de Chile and Lima. Photos were also the most common marketing strategy used by the establishments classified in all groups of keywords, while free delivery and discounts differed among them.

Key words: Digital food environment: Meal delivery apps: Food marketing: Restaurants: Latin America

Food environments digitalisation is creating new forms to acquire foods using digital technology[1]. The influences of the digital food environment in conjunction with those from the physical food environments model individuals' food choices[1,2]. Therefore, the digital food environments should also be considered as an important topic in the public health field, specially in food policy formulation and research[3].

Meal delivery apps (MDA) are popular meal-shopping channels within the digital food environments that connect consumers with food retailers[4]. By downloading the app or accessing the company's website, consumers can choose a meal, place their order, follow its preparation and receive it without travelling[4]. It is a convenient and practical way to eat, which allows access to a wide variety of establishments and types of food using a device connected to the Internet[4].

When using an MDA, consumers can search using keywords that define the type of cuisine (e.g. 'Brazilian'), the type of meal (e.g. 'Meat and fish') and the occasion for consumption (e.g. 'Breakfast')[5]. The user can also access a list of the most popular or nearest establishments and choose their meal by the terms that characterise each establishment. Marketing strategies, such as illustrative photos and advertisements of meals with discounts or without delivery charges, are frequent in MDA[6–11] and improve the user experience on the platform and influence the user's decision to purchase[2]. Due to the characteristics of convenience and practicality, the use of MDA has grown. Worldwide, the projected revenue for this sector is US\$ 130·2 billion in 2022[12]. In Latin America (LA), in 2020 and 2021, the online food delivery market grew by over 20·0 %, reaching US\$ 5·4 billion[13].

The frequent use of MDA is critical from a public health perspective due to the widespread promotional supply of foods and meals of poor nutritional quality[14]. This evidence comes primarily from developed countries, such as Australia, New Zealand, Canada, the USA and the Netherlands[5,7,15–17], and such evidence from undeveloped or developing countries is scarce. In LA, for example, data on food offerings on MDA are available from only one city in Brazil, with approximately 70 % of online menus advertising sandwiches, fried snacks and pizza. In contrast, offerings of traditional meals and dishes predominantly composed of vegetables account for only 30 % of ads[8].

Table 1. Grouping of the keywords that characterise the establishments in the meal delivery app (MDA), 2020

Typical cuisine	Meat and fish	Snacks	Breakfast	Desserts	Healthy
• Arabic • Asian • International • Italian • Mexican • Sushi • Tacos	• Roasted meat • Fish and sea food • Parilla • Poultry • Wings	• Burgers • Hamburgers • Pizza • Pizzas	• Breakfast • Brunch • Coffee	• Pastry and desserts • Posters • Ice cream	• Healthy

Grouping was made only with the keywords representing 80 % of the terms most used by the establishments to characterise themselves. All the terms were originally written in Portuguese or Spanish in the app and were translated to English.

The minimal availability of scientific evidence on the online meal market in the LA region is an obstacle to understanding how the digital food environments can influence health and nutrition outcomes in this population. Obesity prevalence in LA adults is estimated at 24 %, higher than the world average of 13·1 %[18]. Therefore, the objective of the present study was to characterise the food establishments in an MDA operating in LA cities according to the keywords used for their description and marketing strategies.

Methods

Presentation of the study

This is an exploratory study that characterised the profile of establishments registered in an MDA in the nine LA cities in which the company operated in October 2020: Buenos Aires (Argentina), São Paulo (Brazil), Santiago de Chile (Chile), Bogotá (Colombia), San José (Costa Rica), Quito (Ecuador), Mexico City (Mexico), Lima (Peru) and Montevideo (Uruguay). These cities were also described based on the number of inhabitants according to data present on the most recent census of each country: Bogotá (2005), Lima (2007), Buenos Aires (2010), São Paulo (2010), Quito (2010), Mexico City (2010), Montevideo (2011), San José (2011) and Santiago de Chile (2017) (https://celade.cepal.org/bdcelade/depualc/).

The MDA investigated here is a Colombian *startup* founded in August 2015. In July 2021, the company was valued at US$5·2 billion and showed 420 % growth in its market value from 2018 to 2021[19]. Ready-to-eat meal delivery services represent the leading order option for this MDA, although the platform also offers e-commerce services for supermarkets and pharmacies.

Data collection

The list of establishments registered with the MDA in each city was obtained by checking whether it was possible to place a meal order at an address pre-established by the platform. This consultation was performed on 1 October 2020 between 19.00 and 21.00 h. All establishments that had the status 'available' for delivery, regardless of whether they were open at the time of data collection, were selected. Only the establishments with 'unavailable' status, that is, those that were not available for purchase at any time, were excluded. The sample consisted of 3339 establishments in the nine cities evaluated.

The establishments were characterised based on the keywords they used to introduce themselves to consumers according to the methodology adopted by Poelman *et al.*[5] The most frequent terms were included in the study (80 % of the sample), later grouped into six categories: 'Typical cuisine', 'Meats and fish', 'Snacks', 'Breakfast', 'Desserts' and 'Healthy'. This grouping was performed without distinguishing plural and singular (e.g. the keywords 'Pizzas' and 'Pizza' were grouped in the same way) and by joining keywords with the same meaning in different languages (e.g. 'Helados' and 'Sorbets' were grouped in the same category; Table 1). Examples of establishments that were classified in each group of keywords in the nine cities can be accessed in the online Supplementary Material.

We also collected the marketing strategies discounts, free delivery and the presence of food/meal photos used by establishments to attract consumers (Table 2). These strategies are the most commonly investigated in studies that evaluated MDA[8–10,15].

Statistical analysis

Descriptive analyses (absolute and relative frequency) were used to estimate the distribution of establishments by cities, keyword categories and marketing strategies. In addition, Pearson's correlation test was used to correlate the number of establishments and the number of inhabitants in the cities. Data were tabulated in a Microsoft Excel spreadsheet and statistically analysed in Stata software version 14.0.

Results

The number of establishments available for meal delivery during data collection varied between cities. Mexico City had the highest number of establishments (n 773), followed by Bogotá (n 655), Buenos Aires (n 567) and São Paulo (n 454). San Jose (n 94) and Montevideo (n 80) were the cities that presented the lowest availability of establishments on the platform. The most populated city in the sample is São Paulo (11 152 968), followed by Mexico City (8 743 871), Lima (7 624 568) and Bogotá (7 276 320). A moderate correlation ($r = 0·6288$) was observed between the number of establishments and inhabitants in LA cities (Table 3).

Keywords referring to 'Snacks' were the most used by establishments in five cities: Montevideo (45·0 %), Sao Paulo (32·6 %), Buenos Aires (31·8 %), Lima (26·7 %) and Bogota (24·9 %). Terms related to 'Typical cuisine' were the most

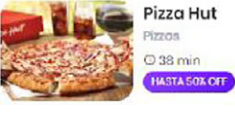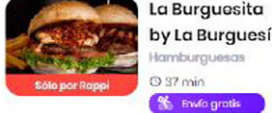**Table 2.** Marketing strategies used to promote food/meal by the establishments in the meal delivery app, 2020

Discounts	Free delivery	Photo
Giving out discounts of up to 50 %	Giving out free delivery	Presence of photos of food/meals offered by the establishments

Table 3. Availability of establishments in the meal delivery app and number of inhabitants in Latin American cities, 2020

City	Number of establishments	Number of inhabitants*	Pearson's correlation test
Bogotá	655	7 276 320	
Buenos Aires	567	2 890 151	
Lima	277	7 624 568	
Mexico City	773	8 743 871	
Montevideo	80	1 298 649	0·6288
Quito	167	2 210 484	
San José	94	288 054	
Santiago de Chile	272	6 683 556	
São Paulo	454	11 152 968	

* Number of inhabitants based on the most recent census of each country: Bogotá (2005), Lima (2007), Buenos Aires (2010), São Paulo (2010), Quito (2010), Mexico City (2010), Montevideo (2011), San José (2011) and Santiago de Chile (2017). This information can be accessed in https://celade.cepal.org/bdcelade/depualc/.

frequent in the characterisation of establishments in Mexico City (51·0 %) and Santiago de Chile (36·0 %). Only the establishments in the cities of Quito (38·3 %) and San Jose (26·6 %) had 'Meat and fish' as the most frequent group of keywords in their description, while no establishment in the city of São Paulo presented itself this way. The keywords 'Desserts', 'Breakfast' and 'Healthy' were used by less than 20 % of the establishments in the evaluated cities, and the last two groups were the least frequent in the samples of four of the nine cities evaluated: Buenos Aires (2·7 %; 4·8 %), San Jose (1·1 %; 7·5 %), Santiago de Chile (5·5 %; 4·4 %) and Quito (4·2 %; 2·4 %), respectively (Fig. 1).

As for the marketing strategies used in the presentation of the establishments, photos were the most frequent, assuming values equal to 84·2 % in the Mexico City sample and higher than 90 % in the other cities. Discounts were noted in the presentation of 77·5 % of establishments in Montevideo, followed by establishments in Bogotá (52·2 %), São Paulo (49·1 %), Lima (48·4 %) and Santiago de Chile (44·1 %). For the other cities, the frequency of the use of discounts by establishments was less than 30·0 %. The frequency of establishments offering free delivery was highest in Quito (77·3 %), San José (75·5 %) and Mexico City (69·7 %), followed by establishments in Santiago de Chile (55·9 %), Lima (51·3 %) and Bogotá (46·1 %). Less than 20·0 % of establishments in the remaining cities advertised this strategy (Table 4).

Keywords were also described in terms of the marketing strategies. Photos were used by at least 90 % of the establishments independently of the keywords. Discounts were used similarly among the establishments classified by the keywords 'Breakfast' (33·2 %), 'Meat and fish' (33·2 %) and 'Typical cuisine' (34·7 %). However, establishments defined as 'Desserts' (26·7 %) had lower percentage of discounts while those classified as 'Snacks' (43·2 %) and 'Healthy' (47·3 %) had higher percentages. Establishments classified as 'Snacks' (29·7 %) and 'Healthy' (35·3 %) also varied among the others (above 45 %) in terms of the use of free delivery (Table 5).

Discussion

Wide availability of establishments registered with the MDA was found in Mexico City, Bogotá, Buenos Aires and São Paulo, as opposed to San Jose and Montevideo. The use of keywords characterising the establishments also differed among the cities evaluated. While terms related to 'Snacks' were the most common in most establishments and those related to 'Desserts', 'Breakfast' and 'Healthy' were the least common, establishments in two of the nine cities more prevalently used the keyword groups 'Typical cuisine' and 'Meats and fish'. Regarding the marketing strategies, photos of foods/meals offered by the establishments were the most common in all cities and in all groups of keywords. Some differences were found on the use of the strategies of free delivery and discounts among the cities and the groups of keywords.

MDA can be considered a dimension of the retail food environment within the digital landscape. Descriptive studies of the community food environment in LA consistently showed higher availability of healthy foods in more affluent neighbourhoods although there were mixed results regarding the availability of unhealthy foods in more disadvantaged areas. However, evidence comes mainly by studies carried out in Brazil and Mexico and do not represent the entire region[20]. Given the particularities between the physical and the digital food environments and the lack of evidence of the retail food environment characteristics in the region, our discussion is limited to an initial reflection on the environment of the MDA in LA and is not intended to explain the reasons for the differences noted between cities. In other words, the study aims to take the first step in analysing this issue and to support and stimulate new investigations.

It is assumed that the wide availability of MDA facilities found in some cities to the detriment of others may be due to their different level of urbanisation. A previous study has found different profiles for the urban landscape and street design of 370
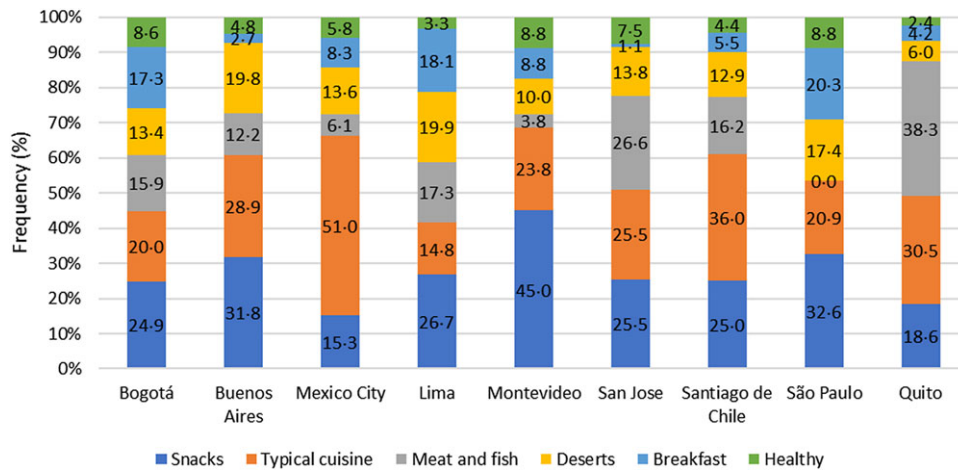
Fig. 1. Frequency of keywords used by establishments in the meal delivery app (MDA) in Latin American cities, 2020.

Table 4. Frequency of marketing strategies offered by establishments in the meal delivery app in Latin American cities, 2020

City	Photo (%)	Discount (%)	Free delivery (%)
Bogotá	92·7	52·2	46·1
Buenos Aires	99·8	7·0	1·7
Lima	100·0	48·4	51·3
Mexico City	84·2	29·0	69·7
Montevideo	100·0	77·5	22·5
Quito	99·4	22·7	77·3
San José	97·9	23·4	75·5
Santiago de Chile	99·3	44·1	55·9
São Paulo	95·8	49·1	13·4

Table 5. Frequency of marketing strategies offered by establishments in the meal delivery app in Latin American cities stratified by groups of keywords, 2020

Keywords	Photo (%)	Discount (%)	Free delivery (%)
Typical cuisine	91·4	34·7	45·9
Meat and fish	94·1	33·2	50·0
Snacks	97·4	43·2	29·7
Breakfast	93·1	33·2	52·2
Desserts	94·3	26·7	47·9
Healthy	96·1	47·3	35·3

cities in LA[21]. These profiles can be useful to describe current urban environments and assess their association with MDA coverage and to develop interventions. In China, for example, the coverage of MDA services is supposed to be higher in more urbanised areas since the food delivery service requires a wide availability of establishments and an accessible road network[22]. In our study, we have added information on the number of inhabitants of the studied cities and found a correlation between this variable and the number of establishments registered in the MDA.

The technological development in large urban centres also favours adherence to MDA and the expansion of this service. Thus, the differences found in the availability of establishments

on the MDA may also be a reflection of this phenomenon. For example, some cities with a greater availability of establishments also have good coverage of Internet and telephone services. In Mexico City, 33·1 % of the population has Internet access, and 74·4 % has mobile phone access, while, in Buenos Aires, 89·51 % of residents have mobile phone access. In São Paulo, 55·8 % of the population has Internet access, and 90·3 % has mobile phone access. These data refer to the year 2010, when the last demographic census took place in these cities, and were available up to the date of completion of this study[23].

We found a high frequency of terms related to 'snacks', which denotes the wide offering of prepared foods such as hamburgers, pizza and other ultra-processed snacks among the establishments of the cities assessed. Studies from developed countries have evidenced the high prevalence of unhealthy meals on MDA. An investigation in Chicago (USA), Amsterdam (Netherlands) and Melbourne (Australia) showed that the keywords 'burger' and 'pizza' were among the 10 most used by establishments registered with a large international MDA[5]. In Australia and New Zealand, over 80 % of the food items on menus on MDA were of low nutritional quality and not in line with national dietary recommendations[15,16]. In Canada, menus from MDA-registered establishments received low scores in the *Healthy Eating Index-2015*[17].

In the LA region, studies on MDA are concentrated only in Brazil[8–10]. The results indicate a high prevalence of items that mark an unhealthy diet (e.g. pizza and hamburgers) on the menu of establishments and in promotional ads. Nevertheless, these authors also recorded relevant participation in advertisements of meal dishes composed predominantly of rice, beans, vegetables and meats, typical ingredients of the Brazilian food culture[8–10]. This is a characteristic that can be explained by Brazilians maintaining the habit of consuming culinary preparations based on fresh or minimally processed foods and culinary ingredients in their main meals (lunch and dinner)[24].

The keywords 'Typical cuisine' and 'Meat and fish' were frequent in the self-presentation establishments in four cities, which points to the possibility that MDA reproduces patterns of the local food culture. For example, keywords that demarcate

traditional meals of the LA region, such as tacos, burritos, parrilla, pollo and alitas, were frequently used. Although the preservation of the food culture is a feature highly recommended for food services[25], cautious should be placed when analysing this result. Establishments can define themselves as traditional even though no commitment is made to produce a real typical dish according to traditional recipes. It is questionable whether the typical cuisine offered by the out-of-home food sector in foreign countries is comparable to homemade food in the country of origin since typical meals usually suffer modifications in order to increase acceptance in different cultures.

Other keywords such as 'Desserts', 'Breakfast' and 'Healthy' occurred at a low frequency across cities. A possible reason may be the less complex food preparation required for desserts and breakfast, leading to less dependence on the convenience of MDA. Moreover, the low frequency of the keyword 'Healthy' denotes the low availability of meals with more healthiness-related characteristics available through MDA establishments. These meals may require more complex operationalisation due to the high degree of perishability of the ingredients and special care for transportation. Thus, they may be unattractive to establishments registered with MDA. As done in the discussion of typical cuisine keywords, it is also important to reflect on the use of keywords related to healthy eating when there is no oversight of the nutritional quality of meals. In some circumstances, establishments can define themselves as healthy for self-promotion, which can mislead consumers.

Regarding the use of marketing strategies, photos, free delivery and discounts were prevalent in the establishments' advertisements, with differences among the nine cities. Similarly, some differences have been noted in the occurrence of these marketing strategies among the groups of keywords. Despite this, all of the strategies were considered frequent in the sample denoting they are a common feature of MDA. The difference in the use of marketing strategies among establishments in the cities and according to the keywords can be attributed to the level of establishments' relationship with the MDA and may reflect significant social, economic and societal differences in the cities in question.

The use of photos of food or meals is among the most used marketing strategies by establishments in the analysed MDA. This resource is highly recommended by the platforms and is an important factor in purchasing food in this medium. To produce photos with quality, the platforms' guidelines for registered establishments involve care with ambient light, the definition of the best angle for the photographic record, the use of editing applications and the composition of the scenario, among others[26]. The strategies of free delivery and discounts provide consumers with economic advantages, which influence the intention and behaviour of the use of MDA by generating in consumers a good perception of cost–benefit in the use of technology[27]. Among twenty-two adults living in the UK who had used online food delivery services on at least a monthly basis over 2020, online food delivery services were not used to purchase healthy food and participants valued price promotions and concluded that receiving them justified their online food delivery service use[28]. Since the majority of food promoted in MDA are not considered healthy, the highly presence of

marketing strategies with great persuasive potential, including those that confer economic benefits, is a concern for public health. Our study generates initial evidence that can support actions encouraging a health-promoting MDA in LA.

Recently, the WHO Europe Regional Office has developed guidance on actions that can be taken to improve the food environments of MDA. The office recommends that researchers conduct studies investigating the impact of MDA on public health in addition to monitoring the evolution of their services and the quality of meals provided[2]. Therefore, the methodology adopted by the present study can be a first step to achieve these actions, primarily because a more detailed analysis of the theme, such as the complete evaluation of the menus of the establishments, can be costly in addition to requiring ample human capital for execution. However, some actions can be taken to improve this methodology. One is the conduction of studies that evaluate the concordance between the keywords used by the establishments and what is offered on the menus.

As the food environment of MDA is largely unregulated[1,2], its characterisation is critical to advancing this agenda in LA. Among the countries of the cities evaluated, in at least seven (Brazil, Chile, Colombia, Mexico, Peru, Uruguay and Ecuador), there are state regulations that seek to place limits on the availability and marketing of unhealthy foods. However, these regulations are weakly applied to the digital environment[29–31].

Therefore, to improve regulatory aspects of the MDA environment, we suggest imposing limits on marketing resources for establishments characterised by keywords that denote poor healthiness of the meals offered and requiring transparency in the nutritional description and composition of the items offered by establishments. In addition, MDA can work to promote a healthier digital food environment by providing conditions that favour the registration of establishments that offer meals of better nutritional quality. Also, the MDA can give more prominence to healthy meals in their layout, such as prioritising the display of healthy establishments over unhealthy ones and favouring the identification of such establishments on their main pages. Establishments identified by traditional cuisine keywords should also be committed to the original recipes and not to add ultra-processed ingredients in their meals.

Finally, despite the strength of the study, some limitations must be highlighted. First, only the keywords used by the establishments were analysed. Therefore, these keywords may not represent all the items offered on their' menus. However, it is assumed that the keyword used by the establishments for their characterisation is strategically planned to represent the main meals offered. Second, the main mealtimes may vary in different countries according to cultural and time zone issues. Thus, using a standard time for data collection (19.00–21.00) may not reflect the time of greatest availability of the establishments on the MDA. However, we attempted to overcome this issue by including establishments that were in closed status at the time of data collection but were active on the platform. Third, since we used a central location to run data collection, it is possible that establishments attending different locations in the city did not compose our sample. However, we have chosen the central area which has the highest urban development and probably the greatest establishments' coverage. Finally, due to the unavailability of updated databases containing

socio-economic indicators for the cities evaluated, it was not possible to compare the keywords and marketing strategies based on these characteristics.

Conclusion

A wide availability of establishments registered with the MDA was found in the Latin American region. However, this availability differed between cities, and greater availability was noted in Mexico City, Bogota, Buenos Aires and Sao Paulo. The use of keywords in characterising the establishments differed among the cities evaluated. However, a pattern of similarity was evidenced in the frequent use of the keyword 'Snacks' for five of the nine cities. Moreover, in at least four cities, the frequency of keywords that mark traditional meals, such as 'Typical cuisine' surpassed that of the other keywords, evaluated. Finally, marketing strategies such as photos of foods/meals, discounts and free delivery were frequent among MDA establishments, although some differences were noted among the cities and the groups of keywords.

Acknowledgements

Supplementary material

For supplementary material referred to in this article, please visit https://doi.org/10.1017/S0007114523001368

References

1. Granheim SI, Løvhaug AL, Terragni L, et al. (2022) Mapping the digital food environment: a systematic scoping review. *Obes Rev* **23**, e13356.
2. WHO EUROPE (2021) Digital Food Environment. https://apps. who.int/iris/bitstream/handle/10665/342072/WHO-EURO-2021–2755–42513–59052-eng.pdf?sequence=1&isAllowed=y (accessed April 2023).
3. Duthie C, Pocock T, Curl A, et al. (2023) Online on-demand delivery services of food and alcohol: a scoping review of public health impacts. *SSM Popul Health* **21**, 101349.
4. WHO EUROPE (2021) Slide to Order: a Food Systems Approach to Meals Delivery Apps: WHO European Office for the Prevention and Control of Noncommunicable Diseases. https://apps.who.int/iris/handle/10665/350121 (accessed December 2022).
5. Poelman MP, Thornton L & Zenk SN (2020) A cross-sectional comparison of meal delivery options in three international cities. *Eur J Clin Nutr* **74**, 1465–1473.
6. Jia SS, Raeside R, Redfern J, et al. (2021) #SupportLocal: how online food delivery services leveraged the COVID-19 pandemic to promote food and beverages on Instagram. *Public Health Nutr* **24**, 4812–4822.
7. Mahawar N, Jia SS, Korai A, et al. (2022) Unhealthy food at your fingertips: cross-sectional analysis of the nutritional quality of restaurants and takeaway outlets on an online food delivery platform in New Zealand. *Nutrients* **14**, 4567.
8. Horta PM, Souza JPM, Rocha LL, et al. (2021) Digital food environment of a Brazilian metropolis: food availability and marketing strategies used by delivery apps. *Public Health Nutr* **24**, 544–548.
9. Horta PM, Matos JP & Mendes LL (2021) Digital food environment during the coronavirus disease 2019 (COVID-19) pandemic in Brazil: an analysis of food advertising in an online food delivery platform. *Br J Nutr* **126**, 767–772.
10. Horta PM, Souza JPM & Mendes LL (2022) Food promoted on an online food delivery platform in a Brazilian metropolis during the COVID-19 pandemic: a longitudinal analysis. *Public Health Nutr* **2**, 1–23.
11. Botelho LV, Freitas JV, Camara AOD, et al. (2023) Digital marketing of online food delivery services in a social media platform before and during COVID-19 pandemic in Brazil. *Public Health Nutr* **26**, 1–11.
12. Statista (2022) Estimated Online Food Delivery Market Size Worldwide from 2022 to 2027. https://www.statista.com/statistics/1170631/online-food-delivery-market-size-worldwide/ (accessed December 2022).
13. Statista (2022) Online Food Delivery in Latin America – Statistics & Facts. https://www.statista.com/topics/6732/online-food-delivery-in-latin-america/#topicOverview (accessed December 2022).
14. Halloran A, Faiz M, Chatterjee S, et al. (2021) The cost of convenience: potential linkages between noncommunicable diseases and meal delivery apps. *Lancet Reg Health Eur* **12**, 100293.
15. Wang C, Korai A, Jia SS, et al. (2021) Hunger for home delivery: cross-sectional analysis of the nutritional quality of complete menus on an online food delivery platform in Australia. *Nutrients* **13**, 905.
16. Partridge SR, Gibson AA, Roy R, et al. (2020) Junk food on demand: a cross-sectional analysis of the nutritional quality of popular online food delivery outlets in Australia and New Zealand. *Nutrients* **12**, 3107.
17. Brar K & Minaker LM (2021) Geographic reach and nutritional quality of foods available from mobile online food delivery service applications: novel opportunities for retail food environment surveillance. *BMC Public Health* **21**, 458.
18. FAO, PAHO, WFP, et al. (2021) *Latin America and the Caribbean – Regional Overview of Food Security and Nutrition 2021: Statistics and Trends.* Santiago: FAO.
19. Statista (2021) Rappi's Market Value from 2018 to 2021. https://www.statista.com/statistics/1025427/rappi-market-capitalization-value/ (accessed December 2022).
20. Pérez-Ferrer C, Auchincloss AH, Menezes MC, et al. (2019) The food environment in Latin America: a systematic review with a focus on environments relevant to obesity and related chronic diseases. *Public Health Nutr* **22**, 3447–3464.
21. Sarmiento OL, Useche AF, Rodriguez DA, et al. (2021) Built environment profiles for Latin American urban settings: the SALURBAL study. *PLoS One* **16**, e0257528.
22. Zhou C, He X, Wu R, et al. (2022) Using food delivery data to identify urban rural areas: a case study of Guangzhou, China. *Front Earth Sci* **10**, 860361.
23. DEPUALC (2022) Distribución Espacial de la Población y Urbanización en América Latina y el Caribe (in English: Spatial Distribution of Population and Urbanization in Latin America

and the Caribbean). https://celade.cepal.org/bdcelade/depualc/ (accessed December 2022).

24. Levy RB, Andrade GC, Cruz GLD, et al. (2022) Three decades of household food availability according to NOVA - Brazil, 1987–2018. Rev Saude Publica **56**, 75.

25. Mingay E, Hart M, Yoong S, et al. (2021) Why we eat the way we do: a call to consider food culture in public health initiatives. Int J Environ Res Public Health **18**, 11967.

26. Ifood (2022) 14 dicas para tirar fotos de comida com o cellular (in English: 14 tips for taking pictures of food with cell phone). https://blog-parceiros.ifood.com.br/foto-de-comida/ (accessed December 2022).

27. Christino JM, Cardozo ÉAA, Petrin R, et al. (2021) Factors influencing the intent and usage behavior of restaurant delivery apps. Rev Bras Gest Neg **23**, 21–42.

28. Keeble M, Adams J & Burgoine T (2022) Investigating experiences of frequent online food delivery service use: a qualitative study in UK adults. BMC Public Health **22**, 1365.

29. PAHO (2021) Report on the Regional Workshop on Regulation of the Marketing of Unhealthy Food Products. https://iris.paho.org/handle/10665.2/52976 (accessed December 2022).

30. Patiño SRG, Rajamohan S, Meaney K, et al. (2020) Development of a responsible policy index to improve statutory and self-regulatory policies that protect children's diet and health in the America's region. Int J Environ Res Public Health **17**, 495.

31. NOURISHING (2022) Restrict Food Advertising and Other Forms of Commercial Promotion. https://policydatabase.wcrf.org/level_one?page=nourishing-level-one#step2=3 (accessed December 2022).