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Children's menus in shopping centre restaurants: a multicentric study

Kids' menu offer

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Abstract

Purpose – The aim of this study is to identify and characterize kids' menu offer in fast-food and traditional restaurants located in shopping centres in five different countries.

Design/methodology/approach – An observational cross-sectional study is carried out, though a study was performed in all restaurants located in shopping centres from main cities, in five countries: Brazil, Chile, Croatia, Hungary and Portugal. A tool for assessing the quality of menus is used for the analysis (Kids Menu Healthy Score (KIMEHS)). Menu prices between countries were compared.

Findings – A total of 192 kids' menus were collected, 44 in Portugal, 57 in Brazil, 66 in Chile, 15 in Hungary and 10 in Croatia. All the countries have average negative KIMEHS values for the menus, indicating that the offer is generally poor in terms of healthy options. The cost of children's menus in European countries is generally low. In Brazil, the price is significantly more expensive, which may limit the accessibility by social economically deprived populations. No significant differences were found in the average cost of meals from different restaurants typology. Traditional/Western restaurants present the highest price.

Practical implications – Globally, kids' menus are composed by unhealthy food items, pointing to the need of improvements in food availability, aiming to promote healthy food habits among children.

Originality/value – This study presents innovative data on children's menus, allowing for characterization of meals offered to children and comparison between different countries.

Key points

- (1) Kids' menus are composed by unhealthy food items.
- (2) Improvement of kids' menus quality will promote children food habits.
- (3) Healthier out-of-home food consumption will contribute to public health.

Keywords Children menus, Food supply, Food quality, Food services

Paper type Research paper

Introduction

The increase in the frequency of food consumption away from home has numerous consequences for public health (Ferreira, 2019; Powell and Nguyen, 2013). Important changes have been observed in food intake patterns in the last decade as a result of the increase of out-of-home food consumption. Approximately half of the budget amount spent on food is made out of home (Soo *et al.*, 2018). Around 5–7% of eating occasions, for children, occurred in leisure places, food outlets and “on the go” (Ziauddeen *et al.*, 2018), namely shopping centres.

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Conflicts of interest: The authors declare no conflict of interest.



Out-of-home food consumption contributes substantially to energy intake by children (Chai *et al.*, 2019; Nago *et al.*, 2014).

It was identified that these, energy-dense, nutrient-poor, non-essential foods, consumed in these settings, have an important contribution to the total daily energy intake, when compared with nutrient-dense, core foods, with the opposite found in home or school settings (Ziauddeen *et al.*, 2018).

Eating out has also been persistently associated with inadequate nutrient intake (Powell and Nguyen, 2013; Uechi, 2018), and several authors from Western countries reported that meals tailored for children at restaurants are poor in quality, being higher in energy than the ones prepared at home. Restaurants kids' meals are deficient in vitamin A and C, calcium, iron, fibre as a result of low supply of fruits, vegetables and whole grains. Children's consumption of restaurant meals has been associated with a greater daily intake of calories, saturated fat, sodium and sugar (Moran *et al.*, 2017; Powell and Nguyen, 2013; Sliwa *et al.*, 2016), probably due to typically large portions as well as unbalanced meals. Researchers from the United States reported that more than 200 Kcal consumed daily come from food eaten out of home (Powell and Nguyen, 2013).

There is also scientific evidence between the consumption of fast food and the prevalence of overweight and obesity (Powell and Nguyen, 2013). Some studies, investigating anthropometric changes or obesity risk association in non-fast-food outlets (Min *et al.*, 2018; Nago *et al.*, 2014), found similar results.

The prevalence of obesity has increased worldwide, fuelled by a profound nutritional transition to processed foods, high-calorie diets and an increasingly sedentary lifestyle (NCD Risk Factor Collaboration (NCD-RisC), 2017; Souza *et al.*, 2018). In Europe, the most accurate and recent comparable data on the prevalence of childhood obesity are provided by the WHO European Childhood Obesity Surveillance Initiative (COSI), which shows a prevalence of overweight, and obesity is 41.9% for boys and 38.5% for girls (di Giacomo, 2019). Shifting foods and meals offered to children in restaurants has the potential to improve diet quality, avoid excess energy intake and help shape healthy habits (Lopez *et al.*, 2017; Yang and Benjamin-Neelon, 2019).

Although there are no mandatory nutrition requirements for kids' meals in chain restaurants, the industry has already made some voluntary commitments to improve meals' quality, such as replacing sodas as the default choice on kids' menus (Moran and Roberto, 2018), the possibility of replacing traditional menu by healthier options, like cucumber and carrot sticks, wrap with salad, soup and apple slices in kids' menu (Viegas *et al.*, 2020) or collectible toys associated to healthy options (DuBreck *et al.*, 2018).

Despite a wide range of studies in recent years aiming to evaluate the quality of school meals, according to our knowledge, only a few studies were developed about the degree to which restaurants provide healthy menu options and even fewer focused on kids' menus.

This study aims to identify and characterize kids' menu offer in fast-food and traditional restaurants located in shopping centres in five different countries, as an opportunity to propose improvements in food availability, thus contributing to promote healthy food habits among children.

Methodology

An observational cross-sectional study was carried out in restaurants located in shopping centres, from the major cities in five countries: Brazil, Chile, Croatia, Hungary and Portugal. Only the ones providing a children's menu were selected. Data collection took place between February 2019 and March 2020. The selection of countries and target cities involved researchers with common investigation interests and former collaborative work. Data collected were publicly available and the principles of ethics in research without humans were considered during all phases of research.

A tool for data collection was developed by the research team, all involved in nutrition research. The tool was organized in two sections, A: place, restaurant type and characteristics, and B: characteristics of the kids' menu (number of options, items that compose the menu, including meat and fish options, vegetables, dessert, fruits and drinks, collectible toys, nutritional and allergens information, cost of the children's menu). Additionally, photographs of the children's menus were gathered, in order to validate/complete the information collected. This tool was validated using the Delphi methodology, and a pre-test was performed in each country. Also, it was translated into three languages: English, Portuguese and Spanish. Data were collected from all the restaurants available in each shopping centre, by the researchers and nutrition students. Researchers also ensured that each restaurant was visited at least twice, to ensure the reliability of the data collected.

For data analysis, restaurants were grouped by category, according to the predominant type of dish: Asian, traditional/Western, Italian, hamburger and others.

For data analysis, percentages of menu items availability were calculated. The Kids Menu Healthy Score (KIMEHS) was used to calculate the healthiness index of the menu. This index includes 18 components, divided by 7 main groups, that reflect key aspects of menu quality, including protein source, side dishes, vegetables, dessert and beverages, and also allergens and nutritional information. Each menu component is evaluated individually, and the score is attributed according to the degree of compliance. Positive points are attributed to healthy options on the menu, while non-healthy choices are negatively scored. Menus ranging from -17 to 0.5 are unhealthy; from 0.5 to 5.5 moderately unhealthy; from 5.5 to 11.5 are classified as going healthy; from 11.5 to 13.5 moderately healthy and from 13.5 to 17 are healthy (see Figure 1) (Rocha and Viegas, 2020).

Score	Menu Evaluation
[-17 to 0.5[Unhealthy
[0.5 to 5.5[Moderately unhealthy
[5.5 to 11.5[Going healthy
[11.5 to 13.5[Moderately healthy
[13.5 to 17]	Healthy

Source(s): Adapted from Rocha and Viegas, 2020

Figure 1. KIMESH classification labels

The statistical analysis was carried out using Microsoft Office Excel and software *R*, version 1.1.453 for Mac. Linear regression analysis was used to identify the food items affecting the KIMEHS index for each country and by restaurants' typology. This analysis was not done in Croatia and Hungary, and it was also not performed across Asian restaurants and others, due to the lack of kids' menus on these venues.

To analyse the menu prices, all currencies were converted to euros and a standardized value was calculated, using the cost divided by the minimum wage for each country and multiplied by 1,000. ANOVA and Tuckey post-hoc test were used to analyse differences between menu prices.

Results

Availability of foods

In all the five countries involved in this study, 192 kids' menus were collected, 44 in Portugal, 57 in Brazil, 66 in Chile, 15 in Hungary and 10 in Croatia (Table 1).

In terms of food items offered to children, red and lean meat are commonly present in all the countries. Brazil and Chile have a high availability of red meat, whereas lean meat is more commonly offered in Croatia. Fish has a much lower presence than meat in general, and only in Hungary its presence is more prevalent than meat. Despite this, the type of fish is mainly fried finger fish. Processed meat (ham, sausages, bacon) is not commonly offered in most countries, except for Portugal, present in 43% of the menus. On the vegetable part of the meal,

Table 1.
Availability of food
items (%) in different
countries

No of menus	Red meat	Fried red meat	Lean meat	Fried lean meat	Fish	Fried fish	Processed meat	Pulses	Chips	Bread, rice and pasta	Non- starchy vegetables	Water	Sugary beverages	Fruit	Dessert	Allergens information	Nutritional information	Collectible toy
PT	44	57	9	50	34	32	25	43	0	52	59	11	43	9	39	16	11	14
BR	57	86	7	75	53	25	7	9	25	77	86	0	2	14	12	18	23	23
HU	15	40	7	53	53	53	13	13	0	93	53	7	13	0	20	27	20	40
HR	10	40		90	70	10	10	20	0	70	40	10	20	10	20	10	10	40
CL	66	94		6	17	33	15	21	0	74	52	0	5	0	36	18	0	6

Note(s): PT = Portugal; BR = Brazil; HU = Hungary; HR = Croatia; CL = Chile

all the countries largely offer chips, as side dish, as well as rice, bread or pasta, and Brazil is the only country that provides pulses (25% of menus). The availability of soup or non-starchy vegetables is low, Brazil and Chile being the countries where these items are more often available (46 and 41%, respectively, for non-starchy vegetables).

Regarding beverages, the availability of water is generally low, Portugal being the country with the higher percentage (43%). Apart from Croatia (20%), all the countries have a high availability of sugary drinks.

As a dessert included in the menu, fruit is not commonly offered, but the availability of sweet dessert is high, with Portugal and Chile at the top of the list (39 and 36%, respectively).

Globally, allergen information is not available in the menu, which does not mean it is not available elsewhere. The same is true for nutritional information.

Hungary and Croatia kids' menu included collectible toys in 40% of the options evaluated. On the opposite, only 6% of the menus evaluated in Chile include this offer.

Availability of food items in different types of restaurants are present in [Table 2](#). Red meat and chips are commonly available in hamburgers outlets and traditional/Western restaurants. Lean meat is also highly present in burger houses, which is provided fried (76%). Asian restaurants are the ones with the highest availability of fish (88%), which is often fried (50%). Italian restaurants present the highest availability of processed meat (55%). Globally, all restaurant types offer grains and starchy vegetables, from which Italian restaurants present the higher values. Non-starchy vegetables are commonly offered by burger outlets (67%). Pulses, soup and fruit have a low availability in all types of restaurants. Burger outlets offer water more frequently (43%) than the others, but all of them have sugary beverages, which are commonly available in Italian, traditional/Western and other restaurants. Allergens, nutritional information and collectible toy are most often accessible at burger outlets.

Evaluation through Kids' Menu Healthy Score (KIMEHS)

The KIMEHS ([Rocha and Viegas, 2020](#)) was calculated globally and for each country. Results are presented in [Table 3](#).

Chile has the lowest KIMEHS (-17) and Portugal the highest (7). All the countries have average negative KIMEHS values, indicating that the offer is generally poor in terms of healthy options. From this, Brazil presents the highest mean value. At least 75% of the restaurants do not get a positive score, nor a score that would indicate a moderately healthy offer—[Table 3](#).

Globally, the types of food that affect the menus negatively are processed food, fried fish, chips and sugary beverages ($R = 0.27, p < 0.01$). The items that positively affect the score are fish, rice, bread and pasta, vegetables and soup ($R = 0.74, p < 0.01$).

When comparing countries, Brazil scores are negatively affected by the presence of processed meat and positively by fish, high availability of starchy and non-starchy vegetables, and Portugal scores are adversely affected by processed meat, fried fish and chips and positively by fish, water, vegetables and soup. KIMEHS scores from Chile are negatively affected by the same items as Portugal, plus the sugary beverages and positively by fish and vegetables.

KIMEHS index according to restaurant typology reveals that Asian restaurants present the least negative values—[Table 4](#).

Burger outlets scores are positively affected ($R = 0.98, p < 0.01$) by availability of pulses, fish, water, fruit and soup. Fried fish and fried lean meat are the food items that negatively affect ($R = 0.64, p < 0.01$) these types of restaurants.

For Italian restaurants, availability of pulses and water positively affect the score ($R = 0.63, p < 0.05$; 63% is explained by these factors), while processed and fried lean meat and chips negatively affect the score ($R = 0.72, p < 0.01$).

Western restaurants' score is positively affected ($R = 0.76, p < 0.01$) by fish, grain and starchy vegetables, water, fruit, non-starchy vegetables and soup. Processed meat, fried fish, chips and sugary beverages negatively affect the score ($R = 0.34, p < 0.001$).

Table 2.
Availability of food
items (%) in different
types of restaurants

No of menus	Fried red meat		Fried lean meat		Fried meat		Fish	Fried fish	Processed meat	Pulses		Chips	Bread, rice and pasta		Non- starchy vegetables	Water	Sugary beverages	Fruit	Sweet dessert	Allergens info	Nutritional info	Collectible toy
	Red meat	Lean meat	Lean meat	Fried meat	Fried fish	Processed meat				Fried fish	Fried lean meat		Lean meat	Red meat								
Hamburger	21	86	0	76	14	14	14	14	0	5	98	62	5	67	43	100	29	38	57	67	76	
Italian	22	59	5	45	18	23	18	18	55	9	27	95	5	14	27	59	0	32	18	9	14	
Traditional/ Western	135	81	3	40	36	33	16	20	20	8	79	59	3	35	6	44	4	26	12	4	10	
Asian	8	25	0	38	25	88	50	13	13	0	25	50	0	13	25	25	0	0	13	13	13	
Mix*	6	50	0	33	17	17	17	33	33	0	50	67	17	17	33	67	17	50	17	0	0	

Note(s): *Restaurants did not have only one type of cuisine, but provided different cuisine styles for menus

Cost

Portugal presents the meal with the lowest cost, while Brazil has the most expensive one, also presenting the highest range of prices. In European countries, meals are generally cheap, as it can be observed by the standardized cost of the menus presented in Table 5.

There are significant differences between Brazil meal cost and all the other countries ($p < 0.01$). Also, meal cost from Portugal menus is significantly different from Chile ($p < 0.01$). No significant differences were found between European countries.

Kids' menu prices according to restaurants' type are presented in Table 6. Mean prices are similar in all types where traditional/Western restaurants present the highest price. No significant differences were found in the cost of different restaurants' typology.

Kids' menu offer

Country	KM mean	KM sd	KM min	KM Q25	KM med	KM Q75	KM max
PT	-6.2	±4.6	-14.3	-10.3	-5.5	-3.5	7.0
BR	-5.3	±3.7	-14.3	-7.8	-5.0	-2.0	2.0
HU	-7.8	±3.7	-12.0	-10.8	-9.0	-6.6	1.0
HR	-7.0	±3.6	-11.5	-9.8	-7.5	-5.1	0.0
CL	-7.4	±4.2	-17.0	-11.1	-7.5	-5.3	2.5
All countries	-6.5	±4.2	-17.0	-10.0	-6.4	-3.5	7.0

Table 3.
KIMEHS values for the kids' menus and by different countries

Restaurant typology	KM mean	KM sd	KM min	KM Q25	KM med	KM Q75	KM max
Hamburger	-5.2	±4.7	-11.5	-9.5	-5.0	-3.5	7.0
Italian	-6.5	±3.7	-13.5	-9.6	-5.9	-4.0	-1.0
Asian	-3.2	±2.1	-5.5	-4.4	-3.5	-2.5	0.5
Traditional/Western	-6.9	±4.2	-17.0	-10.5	-7.5	-4.5	3.8
Others	-6.5	±4.4	-14.3	-7.4	-6.5	-3.8	-1.5

Table 4.
KIMEHS index according to restaurants' typology

Country	Cost (€) min	Cost (€) mean	Cost (€) SD	Cost (€) max
PT	3.1	8.4 ^{bc}	±2.3	13.3
BR	12.5	25.1 ^a	±16.5	129.6
HU	5.1	8.8 ^c	±3.1	16.4
HR	5.5	7.9 ^c	±2.3	13.6
CL	6.7	14.9 ^b	±6.1	30.8

Note(s): ^aSignificant difference from all other countries

^bSignificant difference between Portugal and Chile

^cSignificant difference between Hungary and Croatia

Table 5.
Cost of kids' menus in different countries

Restaurant typology	Cost (€) min	Cost (€) mean	Cost (€) SD	Cost (€) max
Hamburger	5.4	12.5	±6.4	23.9
Italian	5.5	11.8	±4.9	22.8
Asian	6.3	11.0	±2.3	13.3
Traditional/Western	5.1	17.2	±13.3	129.6
Others	3.1	10.1	±9.6	29.3

Table 6.
Cost of kids' menus in different restaurant typology

Discussion

Globally, the menus addressed to children are mostly composed by unhealthy food items, such as red and processed meat, chips, sugary beverages and sweet desserts. The application of the KIMEHS index supports this descriptive analysis (Table 2). Results return low negative scores, indicating that most menus are unhealthy (from -17 to 0.5). Less than 25% of the menus score above 0.5 , with a maximum of 7 , ranging from moderately unhealthy (0.5 – 5.5) to going healthy (5.5 – 11.5). In the USA, studies that have applied similar indexes—Healthy Eating Index (HEI)—obtained scores below 60 (scale from 0 to 100), revealing a nutritionally poor food supply, not complying with current dietary recommendations (Hearst *et al.*, 2013; Kirkpatrick *et al.*, 2013).

Red and processed meat are commonly offered foods that negatively affect the menu scores. Red meat consumption is excessively consumed worldwide (Lentz *et al.*, 2018). Recommendations for red meat reduction have been proposed considering health and sustainability issues (Apostolidis *et al.*, 2019; Mendenhall *et al.*, 2019). Although, red meat is considered a source of high biological value protein, iron and vitamin B12, its high consumption has also been associated to several health risks, such as cancer, heart disease, diabetes and other chronic diseases (Forouzanfar *et al.*, 2016). Also, compared to other sources of proteins (poultry, fish or pulses), red meat consumption, may lead to higher risk mortality caused from these diseases (Qi and Shen, 2020; Sokolowski *et al.*, 2020; Zhubi-Bakija *et al.*, 2021). The International Agency for Research on Cancer (IARC) classified red and processed meat as carcinogenic. According to the level of risk, processed meat was placed in the group 1—carcinogenic for humans (18% increased risk in colorectal cancer per 50 g of processed meat increase per day), and red meat in group 2A—probably carcinogenic for humans (2018). Although these types of meat are commonly available and consumed in all countries, as expected, they are more frequently provided by burgers outlets and traditional/Western restaurants.

During childhood, children develop food habits and food preferences (Birch and Fisher, 1998; Nicklaus, 2016). Providing this type of meat for children, more frequently than fish, reinforces the preference for meat, impairing the implementation of red meat reduction policies. Moreover, the lack of pulses, either as a source of protein or carbohydrates, also weakens the strategies to increase consumption of this food group, recognized as relevant in terms of health, food security and sustainability. Interventions aiming to change the food offered to children, reducing red meat and increasing alternative protein sources, such as pulses and nuts, could have a strong impact on health and the environment. Also, these foods are less expensive when compared to meat (Swinburn *et al.*, 2019).

Although fish is somewhat offered in menus, and positively affects its score, it is usually provided fried, which increases fat in general, saturated fat, trans fat and energy content. Fried potatoes (chips) are also common in all countries and many type of restaurants as the most frequently offered side dish in the menus. These types of food have been described as high in fat, salt and energy (Garemo and al Naimi, 2018; McCrory *et al.*, 2019; Sliwa *et al.*, 2016), thus contributing to diet related diseases. Apart from this, fat highly increases palatability (Montmayeur *et al.*, 2010), thus potentiating overeating and promoting the liking for these types of foods, which, as addressed before, is particularly significant for children while developing food preferences (Anzman-Frasca *et al.*, 2018; Beckerman *et al.*, 2017; Birch and Fisher, 1998).

Starchy vegetables are a good source of carbohydrates, which should represent a major part of energy intake. Their availability in the menus contributes to improve KIMEHS score. Nevertheless, although some restaurants offer rice and pasta, most of the menus provide bread in the hamburger, which is known to be a low-quality bread, made with refined grains, with sugar and fat (USDA, 2021). Italian restaurants as expected have the highest availability of grains (pasta and pizza bread), which is counter-acted by its high availability of processed meat, which as mentioned before poses a risk.

Apart from offering poor choices, the menus also have a low availability of fruit and vegetables, which is consistent with results found in previous studies (Moran *et al.*, 2017; Murphy *et al.*, 2020; Sliwa *et al.*, 2016). Low fruit and vegetable consumption is related to increased risk of chronic diseases (obesity, cancer, diabetes) (Afshin *et al.*, 2019) and, along with the recommendations to reduce meat consumption, the increase of fruit and vegetable intake has been widely advocated, considering both health and sustainability targets (Mendenhall *et al.*, 2019). In fact, the Food and Agriculture Organization has declared 2021 as the International Year of Fruits and Vegetables “to raise awareness on the important role of fruits and vegetables in human nutrition, food security and health and as well in achieving UN Sustainable Development Goals” (Food and Agriculture Organization of the United Nations, 2021). As stated before, increasing availability of plant based foods can also have a positive impact in menu price.

Sugary drinks are a source of added sugars, also related to chronic diseases such as obesity and diabetes (Vos *et al.*, 2016). The high availability of these beverages, as part of the menu, counteracts with the low availability of water, thus promoting increased sugar and energy intake. Several authors propose sugary drinks should be charged with an extra value, as a demotivating strategy (Hashem *et al.*, 2019; Jones *et al.*, 2019; Yang and Benjamin-Neelon, 2019). As well as fat, apart from the increased energy intake, sugary beverages contribute to the development of sweet preference, that may hinder the development of adequate food habits (Birch and Fisher, 1998; de Cosmi *et al.*, 2017; Fidler Mis *et al.*, 2017; Ventura and Mennella, 2011).

Although burger outlets present highest availability of collectible toys, the promotion of menus through this strategy, is only relevant for Hungary and Croatia. This approach has been used to promote consumption and has been identified as an important driver for food choice in these settings especially focussing young consumers (McAlister and Cornwell, 2012).

The cost of children's menus in European countries is generally low, with no differences between Portugal, Croatia and Hungary, which means that the access to these meals is facilitated, since price is one of the most important determinants for food choices (Neumark-Sztainer and Perry, 1999; Steenhuis *et al.*, 2011; Story and Neumark-Sztainer, 2002). In the opposite situation is Brazil, where price is significantly different and more expensive than the other countries, which may limit the access to these meal to social economically deprived populations, which are usually, also, the ones with the lower literacy levels (Carbone and Zoellner, 2012). In Chile, meal cost, although significantly different from Brazil, is similarly high compared to European countries, also impairing the access in poorer populations.

Considering the increase in out-of-home food consumption, along with the prevalence of diet-related diseases, that are starting to develop in earlier ages, restaurants' food offer needs major improvements. Current practices fail to address health or sustainability concerns and do not comply with the most recent recommendations. Shifting food offer according to the recommendations, reducing animal foods and increasing plant based foods, would make menus less expensive, thus increasing access to more children, and at the same time, promoting better food habits and contribute to improve health. Information addressed to consumers often focus on nutrition content, rather than the type of food that is offered (Mozaffarian *et al.*, 2018), often leading to poor food choices. The regulation of meals offered to kids in restaurants represents a significant challenge, particularly taking into account the high prevalence of childhood overweight and obesity worldwide and the potential barriers of stakeholders and consumers (CIHEAM/FAO, 2015; Renzella *et al.*, 2018). The establishment of policies that promote healthy eating environments availability, should be prioritized, considering the results of the present study.

Studies from the US have explored the perspectives of parents, children and restaurant staff on children's meals in quick or full-service restaurants. The results indicated that almost

two-thirds of children ordered from child menus, with 8% ordering healthier kids' meals, despite healthier options being available in all participating food outlets. Interviews with restaurant staff highlighted the complex drivers of menu changes including profitability, customer demand, regulation and corporate social responsibility (Crixell *et al.*, 2014; Lopez *et al.*, 2017).

Globally, the evaluated kids' menus in all countries are composed by unhealthy food items, pointing to the need of improvements in food availability, aiming to promote healthy food habits among children. Apart from this improvement, a more comprehensive, more immediate and easier to understand information about the menus, such as the KIMEHS index could improve consumer awareness on the poor quality of the menus and influence restaurant managers to improve the menus.

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