

Elaboration of a roadmap for inspection of good practices in food handling and marketing in the informal sector

Elaboração de roteiro para inspeção das boas práticas de manipulação e comercialização de alimentos no setor informal

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ABSTRACT

The informal food trade plays a large social, economic, nutritional and cultural role in the lives of consumers. However, informally marketed food may be considered a health risk to the population because it can be easily contaminated due to inadequate conditions at the place of preparation, since they often occur on the street, and there is a lack of knowledge of handling, hygiene and sanitation techniques, by traders. Thus, the present study aimed to elaborate an itinerary of inspection of good practices of manipulation and informal food marketing. The structured roadmap was based on current legislation and bibliographical references of the area. It was prepared, evaluated in the field and adjusted, post-evaluation, by a team composed of a health surveillance supervisor and the researchers. The script had 26 questions on environmental and structural aspects of trade, food handlers and quality and conditions of exposure and storage of ready-to-eat foods and raw materials for their preparation, as well as fresh foods. This instrument was easy to apply and adequate to evaluate the commercialization. In addition, it has the potential to collaborate with the work of sanitary agents, since it makes it possible to register the main irregularities observed in this segment, besides contributing to a uniform inspection.

KEYWORDS: Street Food, Good Practices in Food Handling and Marketing, Inspection List; Sanitary Surveillance

RESUMO

O comércio informal de alimentos desempenha um grande papel socioeconômico, cultural e nutricional na vida dos consumidores. Entretanto, considera-se que os alimentos comercializados informalmente podem constituir um risco à saúde da população, pois podem ser facilmente contaminados devido às condições inadequadas do local de preparo, uma vez que tal comércio ocorre muitas vezes na rua e há falta de conhecimento de técnicas de manipulação higienicossanitária por parte dos comerciantes. Assim, o presente estudo teve por objetivo elaborar um roteiro de inspeção das boas práticas de manipulação e comercialização informal de alimentos. O roteiro estruturado foi fundamentado em legislações vigentes e na literatura científica da área. Foi elaborado, avaliado em campo e ajustado, com pós-avaliação por equipe composta por um fiscal da vigilância sanitária e os pesquisadores. O roteiro contou com 26 questões que versam sobre aspectos ambientais e estruturais do comércio, manipuladores de alimentos e qualidade e condições de exposição e de armazenamento dos alimentos prontos para consumo e das matérias-primas para seu preparo, assim como dos alimentos *in natura*. Este instrumento mostrou-se de fácil aplicação e adequado para avaliar a manipulação e comercialização de alimentos no setor informal, além disso, tem potencial para colaborar com o trabalho de agentes sanitários uma vez que possibilita o registro das principais irregularidades observadas nesse segmento, além de contribuir para uma uniformidade na inspeção.

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INTRODUCTION

Informal trade on public roads or other similar places has always helped to meet the demand of the food market¹. Informally marketed food plays an important social, economic, cultural and nutritional role in people's lives, since it also contributes to meeting the food and nutritional needs of consumers, at affordable prices to the middle and low income groups^{2,3,4}.

In some situations, the sanitary and hygienic quality of this informally marketed food is affected. This can lead to contamination and consequent hazard to the health of the consumers. Many factors can increase the chances that this food will be contaminated by pathogenic microorganisms, chemicals or harmful objects⁵. Among these factors, highlights to the lack of knowledge about good practices of food handling and marketing by the merchants, the exposure of raw materials to environmental contamination and the preparation/marketing of food in places with intense people flow like bus stops, hospital entrances, schools, squares, farmers' markets and market-places. Moreover, many products are stored in plastic containers, kept at room temperature and prepared in places with inadequate infrastructure, with no drinking water or sewage network^{4,6,7}.

Two important tools to support and assess the sanitary and hygienic quality of food from its preparation to its sale are the Resolution of the Anvisa Collegiate Board (RDC) number 216/2004⁸ that provides on the Technical Regulation of Good Practices for Food Services and RDC number 218/2005⁹ of Anvisa, which deals with the Technical Regulation of Sanitary Procedures for Handling Food and Beverage Prepared with Vegetables. Although they can assist health workers with regard to good handling and marketing practices, the two resolutions are not specific to informal food trade on public roads or similar places. Therefore, in many cases, it is necessary to adapt the resolutions for use in the inspection of this type of food trade. This situation emphasizes the importance of preparing a roadmap for the inspection of good practices in the handling and informal marketing of food that is compatible with the peculiarities and diversity of this type of trade and that can support sanitary agents during their inspection routine.

Some roadmaps for evaluating the informal trade of specific items like hot dog carts² and sugarcane juice¹⁰ are available in scientific literature. However, these roadmaps do not apply to other segments of the informal trade, such as pastry tents, fresh or processed meats, barbecue, dressings, sweets, snacks in general, fruit and vegetables, juices and coconut water.

Considering the importance of tools that support the work of sanitary agents and that enable them to evaluate the good practices of handling and marketing of informal food in public roads and similar places, as well as the scarcity of roadmaps to evaluate different segment of this trade, this study aimed to design a roadmap for the inspection of good practices in food handling and informal marketing that is comprehensive and easy to apply.

METHOD

This research was carried out between January and June 2015, with a descriptive and qualitative approach. The structured

roadmap for the inspection of good practices of food handling and informal marketing was designed considering the municipal¹¹ and federal^{8,9} legislation in force and the operating conditions observed in the informal food trade reported in the scientific literature. The roadmap was prepared in four stages, as described below:

- Study of current legislation and scientific literature in the area: eight meetings lasting two hours each, carried out by a study group composed of professors of the Department of Nutrition and undergraduate students of Nutrition of the Federal University of Juiz de Fora (UFJF), at the Governador Valadares campus. Six of these meetings made the critical analysis of scientific literature about food and informal food trade^{3,4,5,6,12,13,14}. The other two meetings had the objective of critically studying RDC number 216/2004⁸ and 218/2005 of Anvisa⁹ and the Sanitary Code of the city under study¹¹.
- Elaboration of the roadmap: the roadmap was prepared by the study group and a sanitary agent representing the Sanitary Surveillance (VISA) of the city under study, considering aspects covered by RDC number 216/2004⁸ and 218/2005 of Anvisa⁹ and in the sanitary code of the city under study¹¹. Two meetings of four hours each were held to prepare the structured roadmap for inspection of good practices of food handling and informal trade. The sanitary surveillance service of the city had only one sanitary inspector who acted in the inspection of informal food trade and, therefore, only he participated in the team that prepared and evaluated the roadmap.
- Experimental application of the roadmap in the field: the roadmap was used by a local sanitary surveillance agent and four researchers, on an experimental basis, in informal food trade located in a farmer's market in the city. Among the informal trade establishments inspected, two marketed fresh food items (chilled chicken and fish) and two marketed ready-to-eat items (pastry, fried biscuits and snacks in general). During the experimental application, the answer, content and answer options of the questions were assessed, as well as the suitability of the content of the roadmap to the type of trade evaluated and the roadmap layout.
- Suitability of the roadmap: considering the observations made by the sanitary agent and the group of researchers, the content, the order of the questions and the layout of the inspection script were adequate.

RESULTS AND DISCUSSION

From the discussions during the study of the current legislation and the scientific literature of the area, the importance of using a tool to support the inspection of informal food trade on public roads and similar places became evident. Since there is already legislation on the provision of food services at mass events (more than a thousand people)¹⁵, we decided to draw up a specific inspection roadmap for informal food trade carried out



outside these events and, for the most part, for less than 1,000 people. The references found associated to the local observations showed what items should be included in the inspection roadmap, considering the diversity of this type of food trade and the main risks that the consumer population is exposed to.

The first part of the roadmap was dedicated to the characterization and identification of street trade, followed by 26 questions that were organized in four dimensions (Figure). The answer options for question 1 were: “does not have it”, “it is connected to the public network” and “has his/her own container”. For the other questions

Roteiro de Inspeção de Boas Práticas de Manipulação e Comercialização Informal Alimentos

Identificação:

Nome do responsável pelo comércio: _____
 CPF/RG: _____ Tel/Cel: _____ Data da inspeção: ____/____/____
 Endereço do responsável pelo comércio: _____
 Endereço do comércio (no ato da inspeção) _____
 Possui algum tipo de licença/registo municipal? Não ___ Sim ___ Qual? _____
 Caracterização do comércio (especificar): _____

I - Aspectos ambientais e estruturais					
Nº	Item	Não possui	Possui, ligada à rede pública	Possui, recipiente próprio	
1.	Disponibilidade de água para lavagem das mãos e utensílios				
Nº	Item	Adequado	Parcialmente adequado	Inadequado	Não se aplica
2.	Condições para higienização de mãos (papel toalha, sabão e álcool em gel)				
3.	Condições de higiene e conservação da estrutura do comércio ambulante (carro adaptado, carrinho, barraca, mesa e similares)				
4.	Condições de iluminação				
5.	Condições das superfícies (mesas, bancadas e móveis em geral) de manipulação de alimentos				
6.	Condições de higiene e conservação dos equipamentos (superfície lisa, impermeável e de fácil higienização)				
7.	Condições de higiene e conservação dos utensílios de manipulação dos alimentos (superfície lisa, impermeável e de fácil higienização)				
8.	Recipiente de lixo com tampa, pedal e saco plástico				
9.	Produtos saneantes guardados e identificados com precauções para evitar contaminação nos alimentos				
10.	Condições de higiene dos arredores (não apresentam fossas, lixo, insetos e roedores e outros contaminantes)				
II – Aspectos relacionados ao manipulador de alimentos					
11.	Vestimenta (limpas e em bom estado de conservação, utilização de touca e luvas descartáveis)				
12.	Apresentação pessoal (barba, cabelo protegido, asseio, uso de adornos)				
13.	Mãos e unhas (higienizadas, unhas aparadas, sem esmalte, sem lesões visíveis)				
14.	Comportamentos durante a manipulação (não fumar, tossir, cuspir, comer)				
15.	Manipulação de dinheiro (se possui funcionário - caixa)				
16.	Participou de alguma capacitação sobre boas práticas de manipulação e comercialização de alimentos, nos últimos 24 meses.				
III – Qualidade e condições de exposição e armazenamento de alimentos prontos para consumo					
17.	Qualidade (aspectos sensoriais) dos alimentos comercializados				
18.	Gelo filtrado e em escamas (armazenado em caixas isotérmicas íntegras de material liso, impermeável e resistente)				
19.	Armazenamento de alimentos (sem contaminação pelo ambiente e/ou cruzada, em vasilhas com tampa, não reaproveitadas, sem contato direto com papeis e sacos reciclados/tingidos)				
20.	Grau de cozimento de alimentos manipulados, prontos para o consumo				
21.	Qualidade do óleo de fritura (cor, odor e viscosidade característicos)				
22.	Conservação de alimentos em temperatura adequada (vasilhas ou caixas térmicas, balcões, estufas)				
23.	Manipulação durante a distribuição dos alimentos (sem contato direto com as mãos, com utensílios individuais apropriados)				
24.	Utensílios e embalagens de consumo (descartáveis)				
25.	Molhos/condimentos oferecidos (sache individual de maionese, catchup e mostarda)				
IV – Qualidade e procedência dos alimentos <i>in natura</i> ou da matérias-primas de alimentos prontos para consumo					
26.	Qualidade (aspectos sensoriais e prazo de validade) e procedência (registro) dos alimentos <i>in natura</i> (Ex: carnes, hortifrúts) e matéria-prima utilizada para o preparo de alimentos.				

Figure. Roadmap of inspection of good practices of food handling and informal marketing.



(from 2 to 25), the answer options were: “adequate”, “partially adequate”, “inadequate” and “not applicable”. Because of the comprehensiveness of the roadmap and the diversity of informal food trade, it was up to the sanitary agent to select the items that applied to that specific trade during the inspection.

“Dimension I” of the roadmap involved ten questions that addressed the environmental and structural aspects of the trade and the conditions of hand hygiene, structure hygiene and conservation, lighting, food handling and hygiene and conservation of equipment and utensils, waste container, storage of cleaning products.

Considering that hand hygiene is essential for the maintenance of the hygienic and sanitary quality of food^{16,17}, we created an item about the availability of water, as well as the presence of paper towel, soap and/or hand sanitizing products for hand hygiene. Sousa, Brum and Orlanda¹⁷ reported the lack of appropriate conditions for the hand hygiene of food workers and showed that the respondents commonly used cloth towels to dry their hands and to wipe surfaces¹⁷.

In a study by Resende et al.¹⁸, it was observed that flaws in the hygiene procedures of equipment and utensils allow the residues adhered to them to become a potential source of cross contamination. Sousa, Brum and Orlanda¹⁷ found that in the majority of the informal food trade establishments they researched the utensils were washed in water buckets in very poor hygienic conditions. In another study by Franco and Ueno¹⁶, the minority of the informal food establishments had trashcans with footswitch. Moreover, some were close to sewage networks, manholes and empty lots. These characteristics are risk factors of contamination that contribute to the appearance of pests and vectors. As a result, the conditions of hygiene and conservation of equipment, utensils and trashcans, as well as the location of the informal food trade, were considered in the preparation of the roadmap.

“Dimension II” of the roadmap addressed aspects related to the food handler and consisted of six questions on clothing, appearance, hands and nails, behavior while handling food, money, and handler’s ability. In this case, the handlers were considered because they play an important role in the hygienic and sanitary safety of food. According to the legislation we consulted^{8,9,11}, handlers must wear uniforms in good conditions, clean and compatible with their activities. They should not wear adornments and should keep their hair up and covered, have no beard, keep nails short, clean and without enamel and do not present behaviors that can result in contamination of food during its preparation. In addition, they should be trained in personal hygiene, proper handling of food and foodborne diseases. However, these legal rulings are not always followed by the workers of informal food trade. Studies have shown that they commonly do not wear proper uniforms or hair protection, wear adornments, have long fingernails and enamel and handle money and food without the required hygiene between the activities^{14,17,19,20,21}. The different authors^{14,17,22,23} agree in pointing training as an important strategy to remedy or minimize these inadequacies. Furthermore, RDC number 216/2004⁸ states that every food handler should be

periodically supervised and trained in personal hygiene, hygienic handling of food and foodborne diseases.

“Dimension III” of the roadmap encompassed nine issues relating to the quality and conditions of exposure and storage of ready-to-eat food, taking into account the temperature of food storage, handling and/or distribution, disposable packaging, available dressings, quality of ice and frying oil, and degree of cooking of the food that is ready for consumption. “Dimension IV” contained a question that addressed the quality and origin of the fresh food or raw material used in the preparation of ready-to-eat items.

With regard to raw materials and food handling, the legislation^{8,9,11} states that establishments producing and marketing food must have suitable equipment for the preservation of perishable food at the temperatures required for cold and hot storage.

Several types of food are traded on the informal market, but one category needs special attention: fresh meat. A study carried out by Silva and Furtado²², in which the meat of chicken sold in farmers’ markets was physically and chemically evaluated, verified that chicken meat had serious issues regarding its storage and conservation. Also regarding the informal marketing of fresh meat, another study by Lacerda et al.²³ found total inadequacy in all the evaluated items (human resources, environmental conditions, facilities and equipment).

Martins et al.², when assessing the hygienic and sanitary conditions of street food trade in the city of Itumbiara, Brazil, observed that 6.7% of them stored perishable products in paperboard and 33.3% did not have adequate containers to display their products. Sousa, Brum and Orlanda¹⁷ found only 25% compliance in food handling by informal food merchants. According to Oliveira et al.²⁵, improper handling and exposure of food increase the risk of foodborne diseases (FBD).

As for dressings (mayonnaise-type sauces, catchup, mustard, olive oil, among others), food-related literature^{16,25} recommends that they be supplied to customers in individual packets. In a study conducted by Carneiro et al.¹⁴, it was observed that this recommendation is followed by most of the informal food merchants surveyed in the city of Belo Horizonte, Brazil. However, according to Pinho²⁶, the packaging of dressings and sauces in tubes is still common in informal food trade. There are also merchants that offer homemade dressings^{6,27}, which increases the risk to consumers due to the use of raw eggs and/or cross-contamination during handling.

The quality of the raw material used in the preparation of food marketed informally and the waiting time of the products before sale are important for the provision of safe food to the consumers. With that in mind, it is essential that the raw materials are not expired and in accordance with the sensory characteristics of each food²⁵.

Regarding the heat treatment used in the handling of food, the legislation⁸ provides that in the preparation all parts of the food must reach a temperature of at least 70° C and that, when it is put up for sale, it must be kept at a temperature higher than 60°



C for up to 6 hours or at temperatures below 5° C for a maximum of 5 days. It also determines that the oil and/or fat used for frying does not constitute a source of chemical contamination of the prepared food and must be replaced immediately whenever there is a clear change in physico-chemical or sensory characteristics like aroma and taste or intense production of froth and smoke.

Therefore, in the roadmap of inspection of the good practices of food handling and informal marketing, we sought to consider relevant issues regarding food handling and exposure to sale.

CONCLUSIONS

The roadmap for informal food trade inspection included a wide range of issues dealing with environmental and structural aspects of trade, food handlers and quality, food exposure and storage conditions. The tool was easy to apply and suitable for evaluating the handling and marketing of food in different types of informal situations on public roads or similar places.

Furthermore, the roadmap has the potential to collaborate with the work of sanitary inspectors, since it enables them to register

the main irregularities observed in this segment, in addition to contributing to uniform inspections.

With that, we expect to contribute to the work of sanitary surveillance regarding the hygiene and sanitary quality of informally marketed food, thus reducing the risk of foodborne illness occurrence.

It should be borne in mind that the participation of only one inspector in the team that prepared the roadmap may have limited the perception of problems in the practice of inspection of informal food trade. This may have resulted in a roadmap that is not fully adjusted to the reality and needs of the city. In view of this, we suggest that the roadmap be frequently reassessed in order to adapt it to the legislation, the characteristics of informal food trade and the needs of the professionals who will use it. We also suggest that other studies be conducted to evaluate the results obtained with the roadmap and to promote their discussion with the members of the local sanitary surveillance body. That could help make inspections increasingly consistent with both the legislation and the bibliographical references of the area, as well as with the conduct of the sanitary agents themselves.

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Conflict of Interest

Authors have no potential conflict of interest to declare, related to this study's political or financial peers and institutions.



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