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Hygienic-sanitary conditions of beach kiosks in Vila Velha-ES, Brazil

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Abstract

The aim of this study was to evaluate hygienic sanitary conditions in ten kiosks located on the beach of Vila Velha-ES. Data were collected through direct observation by a checklist based on RDC Resolution no. 216/2004. This list was compiled considering 11 blocks to be evaluated, where, at the end, the establishments were classified in Group 3, according to the percentage of compliance to the items listed in the checklist (0-50%). There were no automatic doors nor millimeter screen on the windows. The physical space of the kiosks is standardized, but does not allow for an orderly flow without cross. Equipment, furniture and fixtures were kept in inappropriate hygienic sanitary conditions at all kiosks. There was no appropriate place to keep cleaning products, which are kept close to foods. According to the integrated control of pests and vectors, 66.66% of evaluated items were in accordance with the resolution. Regarding handling practices, it was observed that no establishment had antiseptic soap or instructions for proper hand washing. Inadequacies were observed in all items related to raw material, storage, as well as documentation and responsibility. The hygienic sanitary conditions of the kiosks are unsatisfactory, which need behavioral and structural changes.

Key words: Quality. Good Handling Practices. Food Safety. Food service. Food Quality.

Introduction

The foodservice industry has expanded because eating out of the home has become a habit among population.[1] There are alternatives that consider the adaptation to urban conditions and generate new ways of providing foods, which certainly contributes to changes in eating habits, among them the kiosks.[2]

Kiosk is a building open on all sides, often with a round or square design. Its structure is comprised of roof, windows, counter and floor, which can function as mini beach restaurants and has the purpose of selling foods and beverages to those who are on the beach and need this service.[3]

The growing demand for this kind of service and the huge competition makes that the quality relating to food intrinsic issues (nutritional and sensory quality), safety (hygienic-sanitary quality), service (customer-supplier relationship) becomes crucial. Such requirement is due to the fact that the consumption of meals outside the home is a habit that exposes consumers to the risk of acquiring food diseases.[4]

In recent years, the hygienic-sanitary control of foods has undergone deep conceptual and technical changes, due to new knowledge acquired on the control of microorganisms that cause Foodborne Diseases (FBD), mainly driven by the emergence of microbial strains more adapted to the old and conventional mechanisms of prevention.[4] FBDs are one of the main consequences of lack of hygienic-sanitary control in foodservices, where a high degree of biological, physical and chemical hazards can be found.[5]

Therefore, control actions are vital in the establishments that prepare/handle foods to minimize contamination risks. To this end, important legal instruments, such as Ordinances no. 1428/1993 and 326/1997, issued by the Ministry of Health, and Resolutions of the National Health Inspection Agency – RDC no. 275/2002 and 216/2004 have been enforced, aiming to contribute to the best quality in the production and provision of services in the food area by providing guidelines on the best practices on food handling.[6-9] The RDC no. 216, of September 15, 2004, brings information on the Best Practices for Foodservices, so as to establish optimal procedures that aim to the best hygienic-sanitary conditions for handling foods safely.[9]

The control of the hygienic-sanitary conditions in the locations where foods are handled is a complex task, once contaminations from different sources can be introduced in the diverse stages of cleaning and food preparation operations[5]. There are various forms of foods contamination; therefore, all stages of the process must be monitored, such as conservation, handling, transport, storage, preparation and distribution. A tool commonly used to verify the described stages is the checklist, which enables to quantify the degree of compliance of a foodservice to the legislation.[4]

The present work had the aim of assessing the hygienic-sanitary conditions of ten kiosks located on a beach in the city of Vila Velha-ES, and classifying them according to their compliance with the provisions set on current legislation.

Material and methods

It is a field survey, with a descriptive and quantitative approach, carried out in January 2014 in ten kiosks, representing 27.77% of a total of 36 kiosks existing on the beach of the city of Vila Velha-ES. Convenience sampling was adopted and according to the consent of the owner/manager of the establishment to participate in the study.

Initially, the owners/managers of the establishments were contacted through a letter of invitation where the objectives of the survey were described, and then asked permission to visit and assess the facilities. All those responsible for the kiosks who attended the survey signed the term of consent to permit the conduction of the survey.

Data was collected by direct observation of a trained researcher during the visits. For the evaluation, a checklist based on the Resolution RDC no. 216/2004 was used, which was divided into three parts, as follows: identification of the business, evaluation and classification of the establishment.[9] The checklist had 11 blocks of questions for evaluation of each establishment, totaling 116 items, as follows: "building, installations, equipment and utensils" (39 items); "integrated control of vectors and pests" (5 items); "water supply" (6 items); "wastes management" (4 items); "handlers" (11 items); "raw materials, ingredients and packaging" (7 items); "food preparation" (21 items); "storage and transportation of ready foods" (3 items); "display of foods ready for consumption" (7 items); "documentation and licenses" (9 items); and "responsibility" (3 items). Each item had three possibilities of response: "Conform", "Non-conform", and "Not applicable" (NA).[8]

After completion of the checklists, the kiosks were classified into three groups, according to the scoring criteria set out in section D of the RDC no. 275/2002, as to the conformity of the items assessed, as follows: GROUP 1 – 76 to 100% of compliance; GROUP 2 – 51 to 75% of compliance; GROUP 3 – 0 to 50% of compliance of the items.[8] The same rating for each of the eleven blocks of the checklist was adopted. The data obtained from the evaluation of the hygienic-sanitary conditions by the checklist were input in Microsoft Excel® spreadsheets and tabulated according to the percentages of compliance.

Results

Regarding conformity with the items proposed in the checklist, the percentage of adequacy of the kiosks ranged from 20.5% to 23.3%, and all the kiosks visited were classified as Group 3. Figure 1 shows the mean percent values of conformity and nonconformity of the items assessed, per block, of the checklist based on the RDC no. 216/2004.[9]

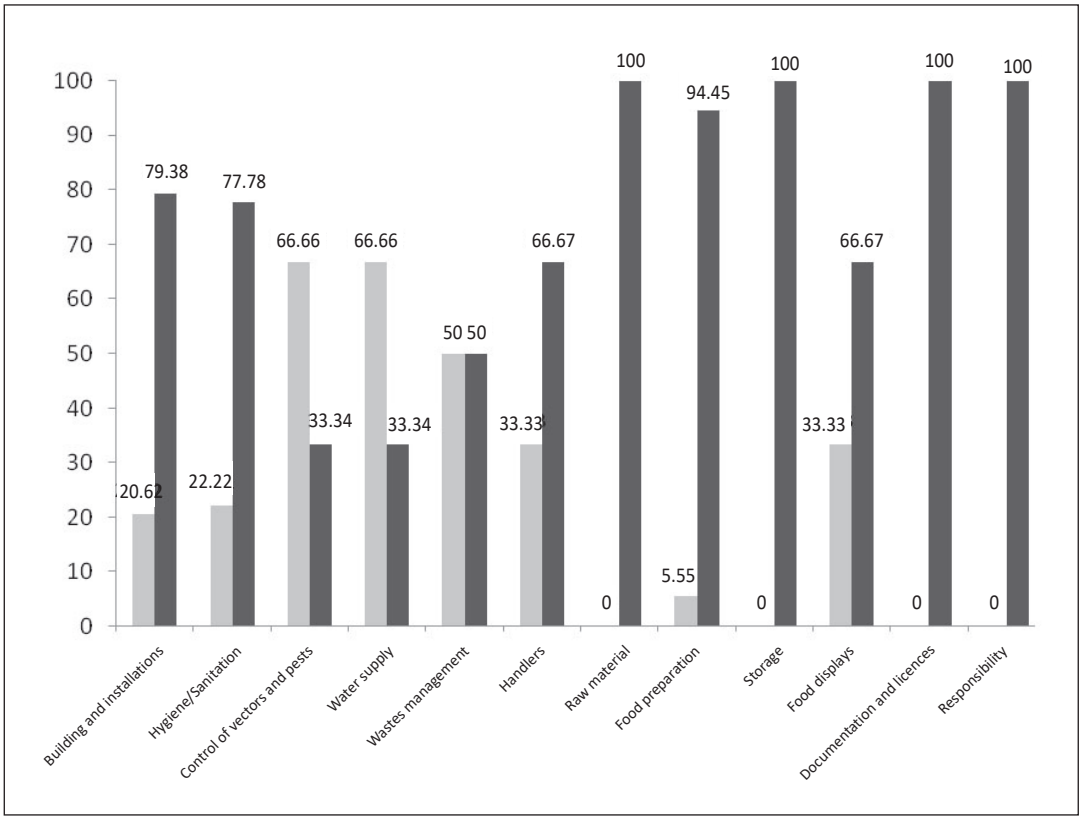

Figure 1. Mean percent values of conformity ( ) and nonconformity ( ) of the items related to the best handling practice, per block, in beach kiosks at Vila Velha - ES.

In the *buildings and installations* block, percentage of compliance of the items ranged from 13.33 to 26.66 %. Because of the small space available, some structures that are common in food-producing areas did not exist in these establishments, such as, for example, automatic doors.

Regarding *hygiene/sanitation of the facilities*, 100% of the kiosks did not keep equipment, furniture and utensils in appropriate hygienic-sanitary conditions and did not store the cleaning products in a proper place.

In the *Control of Vectors and Pests* block, it was observed 66.66% of conformity of the items assessed, showing that most of the establishments are concerned with the prevention of occurrence and proliferation of urban pests.

Of the total items evaluated in the *Water Supply* block, in all kiosks there was 33.33% of conformity. It was observed that the water used in these facilities comes from wells.

With regard to *Wastes Management*, in all facilities inspected, the trash flow was not different from that of raw materials, which can favor cross contamination. This contributes to produce bad smell, attract urban pests and favor contamination of the product, taking into account the close proximity of the trash bins to the area of foods handling and service.

Regarding the *Handlers* block, it was observed 33.33% of adequacy of the items in all establishments. Such low conformity poses risks for consumers, once handlers are the main promoters of possible contamination.

In the *Raw Materials and Ingredients* block, all kiosks showed 100% of nonconformity. Failures were observed in the areas of receiving and storage, where incoming raw materials were neither thoroughly examined nor stored in appropriate places to ensure the foods hygienic-sanitary condition. Foods receiving was not performed in a clean and protected place, raw materials were not stored appropriately, and this sector was disorganized and dirty.

With regard to *Food Preparation*, all kiosks indicated 5.55% of conformity. It was observed that in 100% of these foodservices foods were thawed at room temperature, which favor microbial proliferation. It was also observed that during preparation there were no measures to prevent contamination and the contact of raw foods with ready foods, which enables risks of cross-contamination between these foods. Raw or ready foods leftovers and foodstuff not entirely used were stored in the same place, without identification, expiration and preparation dates. Another

inconsistency found was the lack of control of the oil temperature used in frying foods, as well as failure in observing the physicochemical and sensory characteristics that indicate the need to replace the oil. In this case, it is possible that the oil used was improper for consumption.

The major problems found in the *Display of ready foods for consumption* block were unsafe display areas for the foods, equipment in poor conditions and with failures in maintaining the proper temperatures and in the utensils used for foods consumption, materials that were difficult to clean and stored improperly. Another serious problem found was that the area used to receive money, cards and other means used for payment is the same where foods are prepared. Moreover, the employees responsible for this activity also handled foods.

With respect to *Documentation and Licenses,* the rate of nonconformity was of 100% in all ten kiosks, all of them classified in Group 3. The Resolution requires that all foodservices should have their Best Practices in writing, in order to ensure the hygienic-sanitary conditions of the foods served.

In the present study, 100% of the kiosks did not comply with the items of the *Responsibility* block.

Discussion

This study showed various failures existing in the beach kiosks that sell foods and beverages. They are failures relating to the physical and functional structure of the facilities and the distribution of the foods to consumers. Such flaws contribute to reducing the hygienic-sanitary quality of the foods offered in these establishments.

These results are different from the data found by Nascimento et al.[10], which indicated that 50.78% of the kiosks assessed, located in the beaches of Vitória-ES, had appropriate hygienic-sanitary conditions.

The adequacy of the building and installations is a condition that facilitates the implementation of best practices in foods handling. They should be built in order to enable an orderly flow, without crossings, in all stages of food preparation and facilitate maintenance and cleaning operations.[8,9] It is known that the physical area of kiosks is standard, but the size of the building and installations is not compatible with all operations.

In the study carried out by Assis et al.,[4] they found no automatic door closing in all kiosks investigated and no millimeter-mesh screens on the widows in 85.71% (n=24) of the same.

Nascimento et al.[10] conducted a survey on the sanitary conditions of kiosks in the city of Vitória-ES and observed that the equipment and utensils were inadequate and stored improperly. On the other hand, Almeida and Hostins, when evaluating the physical structure of the kiosks, found that 95.6% were in good conditions.[11]

According to Fonseca et al.,[12] one of the main aspects considered in the implementation of best practices and quality of cooked foods is the adequacy of buildings, installations, equipment, furniture and utensils. When foodservices are properly designed, production flows are streamlined, without intersections in all stages of foods preparation, and maintenance, cleaning and disinfection operations are easy to perform.

Regarding cleaning of installations, foods can be contaminated by contact with utensils, surfaces and equipment that have been improperly cleaned. Assis et al.[4] commented that 71.43% (n = 20) of the kiosks did not present easily-accessible and easy-cleaning equipment, and that 71% (*n* =21) of the kiosks did not have a proper place for storing cleaning products. According to current legislation, the surface of utensils must be smooth, impermeable, washable and free from roughness, cracks and other imperfections that may prevent cleaning, thus favoring foods contamination.[9] However, the utensils of all kiosks visited did not conform to the standards set out by the RDC no. 216/2004.[9] The result found is of concern because the presence of roughness, cracks and other imperfections that prevent adequate cleaning may be conducive to microbial proliferation and consequent formation of microbial biofilm.

With regard to pests control, in a study conducted by Assis et al.,[4] they reported that half (*n*=14) of the kiosks were conform to legislation, showing a visible certificate and expiration date. Integrated Pest Management (IPM) is vital in food services, because this environment usually offers all three elements that are conducive to the development of urban pests, namely: food, shelter and water.[13] It is necessary to prevent attraction, shelter, access and/or proliferation of vectors and urban pests in restaurants, and this is possible if some effective and continuous measures for pests control are used.[14]

Despite microbiological analysis of the water used in the kiosks has not been carried out, in other studies, such as that by Colvara et al.,[15] where they assessed the quality of waters from artesian wells, showed that there were evidences that the waters were improper for consumption according to current microbiological standards. The quality of water used in the preparation

of foods and in cleaning procedures is crucial to the final quality of meals. Therefore, by using water from wells, which is not treated to ensure its drinkability, such kiosks put at risk the quality of the foods served. Water quality control for any use in foods production is necessary to prevent possible risks to consumers' health. Therefore, water must be fit for drinking, and to achieve this, it is necessary that the container is clean, intact and covered to assure its quality.[13]

Wastes management was also assessed in the kiosks and none of the establishments met the requirements of the Resolution no. 216/2004.[9] Such noncompliance to the resolution may ultimately cause damages to the establishment, because it can attract several urban pests and vectors. Moreover, it is worth noting that the trash flow was not different from the raw materials flow, which can be conducive to cross contamination. This contributes to attract bad smell, urban pests and allow product contamination, taking into account the close proximity of the garbage bins to the area where foods are manipulated and served.

Similar results were observed by Almeida and Hostins when they assessed kiosks located at the central beach of Camboriú, SC, and found that 8.8% of the establishments did not follow the norms and regulations regarding the place designed for the trash bins, 21.9% did not clean the bins properly and 12.3% of them did not dispose of the trash as set forth by regulations.[11]

With respect to the *handlers* block, it was found low conformity, which means risk for consumers, once handlers are the main promoters of possible contaminations. It should be noted than none of the foodservices provided antiseptic soap for hands cleaning and a poster illustrating adequate handwashing. This fact shows that that there was no guide on proper handwashing and antisepsis, as set by legislation in force. Assis et al. also detected the same inadequacies in all kiosks assessed.[4]

It was also found that in none of the establishments the employees wore uniforms compatible to the activities, only a blouse with the logo of the establishment as uniform. The handlers did not have their hair covered by caps or nets. In the study conducted by Nascimento et al., 44.5% of the handlers wore apron, 73.1% wore closed shoes, only 22.7% had appropriate hair protection, and 51.3% had short fingernails and without nail polish, clean hands, no adornments and skin diseases.[10] The Resolution RDC no. 216/2004 requires that handlers should have personal hygiene, wear uniforms compatible with the activities, have been trained on personal hygiene and should know how to behave when performing their activities to ensure that they would not jeopardize the foods hygienic-sanitary quality.[9]

Regarding training, none of the kiosks assessed offered training to the handlers. Similar situation was observed by Gonçalves et al.,[16] where 91.1% of the kiosks handlers on the Itararé beach have not received training relating to personal hygiene and handling, and 73.3% did not wear uniforms suitable to the activity. In Almeida' study, the kiosks' handlers attended training sessions on the best practices of foods handling, which indicated their concern in preparing foods safely.[17]

With regard to receiving and storing of raw materials, current legislation indicates that the places must be clean and protected to ensure protection against contaminants, and that raw material must be stored on pallets or shelves made of smooth and sturdy materials, with appropriate spacing to ensure natural ventilation and cleaning when needed.[9] It is worth noting that in the case of kiosks, where space is limited, those responsible for the business should develop strategies to ensure organization and safe foods storage. Gonçalves et al.[16] observed that 73.4% of the kiosks on Itararé beach, in the city of São Vicente-SP, did not keep the stocks temperature under control and 44.5% of the units showed improper hygienic-sanitary conditions.

The percentage of noncompliance of the documentation with the law was of 100%. The Resolution requires that foodservices must have their Best Practices in writing, to ensure the hygienic-sanitary conditions of the foods. Souza et al. found in a study that after implementation of the Best Practices Manual in a foodservice, significant changes took place, which were even greater after the employees' training, who became more careful regarding hygiene and foods handling.[18] The use of Standard Operational Procedures contributes to ensure the required hygienic-sanitary conditions for foods preparation, complementing the Best Practices. [19]

None of the kiosks conformed to the items of the *Responsibility* block. According to the RDC no. 216/2004, these employees must receive training on at least the following aspects: food contaminants, foodborne diseases, safe foods handling and best practices.[9]

Conclusion

The hygienic-sanitary conditions of kiosks are very worrisome, once the basic items for the foods quality assurance are not followed. The conditions found in most of the establishments inspected can be classified as hazardous.

The best practices for safe foods handling are not fully fulfilled by the kiosks' food handlers. Few items attained the criteria required by legislation, which can put the consumers at high risk of food poisoning. The problems encountered are often of structural nature, and can be solved with massive investments on the sector.

These results show the importance that competent authorities conduct regular inspections at these establishments, aiming to guide and make owners and food handlers aware of the importance and benefits of good practices on safe foods handling.

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