

Foodborne Diseases

Subjects: [Pathology](#)

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Foodborne diseases (FBDs) comprise a broad spectrum of illnesses that result from the ingestion of contaminated foodstuffs or water. FBDs can occur at any stage, from production to food consumption, and contamination may be the result of environmental contamination, such as pollution of water, soil, or air [1]. FBDs represent one of the most critical public health problems in the world, especially in developing countries that present serious shortcomings in infrastructure and basic sanitation [2–5]. With the knowledge to prevent FBDs, and the concerns about the increase in FBD cases arising in households, it is essential to evaluate homes' good food preparation practices.

Foodborne diseases

home-kitchens

Good habits

prevention

instrument

reliability

1. Definition

Food Safety Conditions in Home-Kitchens is defined as adequate conditions for storage and production of food and meals, as well as adequate conditions for water supply and sanitary sewage destination^{[1][2][3][4][5]}.

2. Introduction

Foodborne diseases (FBDs) represent a threat to public health and hamper global socioeconomic development. FBDs are not among the priorities for public health prevention and care, especially in developing countries^[6]. In general, the countries presenting the highest rates are those that have the fewest resources to prevent them^{[2][3]}.

In Brazil, between 2007 and 2018, 134,046 cases of FBDs were recorded, with 19,394 hospitalizations and 129 deaths^[4]. Another recent study^[5] assessed the FBD outbreaks reported in Brazil between 2000 and 2018, based on the Brazilian official data and the scientific literature. It showed that 13,163 FBD outbreaks were reported in the country during this period, involving 247,570 cases and 195 deaths. Both Brazilian studies highlighted the households as the primary site of FBD occurrence (38.3%^[4], and 12.5%^[5]). It is essential to consider that reports showed that most cases of FBD are not notified to health authorities; because many foodborne pathogens cause mild symptoms. Victims do not seek medical help, contributing to the underreporting of epidemiological data^{[4][5]}.

3. Evaluation of Hygienic Sanitary Conditions

To evaluate Food Safety Conditions in Home-Kitchens, a study was conducted in the Brazilian Federal District using a previously validated questionnaire. The questionnaire is composed of 77 items divided into four blocks (1. Construction and facilities; 2. Equipment, furniture, and kitchen utensils; 3. Handlers; and 4. Food and Feedstock) [7]. The questionnaire to evaluate home kitchens accepted three types of answers per item in each block (yes, no, or not applicable).

Evaluation of collected data occurred by classifying the home kitchens as in low, medium, or high sanitary risk (Group 1—Low risk—76 to 100% of attendance; Group 2—Medium risk—51 to 75% attendance; Group 3—High risk—0 to 50% attendance) [8].

4. How are the Safety Conditions of the Home-Kitchens?

In the present study ($n = 226$ home kitchens), the majority of the interviewees were female ($n = 146$, 64.6%), with completed undergraduate level ($n = 66$, 29.2%) and aged between 45 and 59 years ($n = 53$, 23.5%, $\bar{x} = 42.37 \pm 1.25$). The majority of the participants declared a monthly family income between 5 and 15 minimum wages (MW) ($n = 76$, 40.0%), followed by 1 to 3 MW ($n = 55$, 28.9%). Households had a mean of 3.38 (± 1.48) inhabitants, showing an asymmetric distribution ($p = 0.000$).

According to the first block of the questionnaire (building and electrical facilities), most homes (79%; $n = 178$) were in conformity with the instrument. In the second block (equipment, furniture, and utensils), most of the home kitchens (73%; $n = 165$) presented conformity of the evaluated items. The third block, composed of items that evaluated food handlers, presented 75% ($n = 169$) of conformities, classified as medium risk of contamination. The fourth block (raw materials and ingredients) also presented a medium risk of contamination (74%; $n = 168$) in the analyzed households. The sample can be classified as in medium risk for food contamination, considering that 46.5% were classified in group 2 for the whole questionnaire (considering the four blocks).

Most of the home kitchens were classified as group 2, medium risk. However, when evaluating the classification per block, block 4 showed the best classification (group 1), and all others were in group 2. Even though food storage in block 4 had a high number of nonconformities, food origin presented much more conformities, and the block was better classified (Table 1).

Table 1. Classification of the home kitchens in groups according to conformities to the instrument in the Federal District, Brazil, 2019.

Checklist section	Classification		
	Group 1 (76–100% of Conformities)	Group 2 (51–75% of Conformities)	Group 3 (0-50% of Conformities)

	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Block 1 (Construction and Facilities)	98	43.4%	119	52.7%	9	4.0%
Block 2 (Equipment, furniture and kitchen utensils)	74	32.7%	124	54.9%	28	12.4%
Block 3 (Handlers)	19	8.4%	113	50.0%	94	41.6%
Block 4 (Food and feedstock)	109	48.2%	64	28.3%	53	23.5%
Total	300	33.2%	420	46.5%	184	20.3%

Regarding family income, there is a difference by the households ($p = 0.020$), specifically between those who earn from zero to one MW and those who earn from 5 to 15 MW ($p = 0.017$). There was also a significant difference between group zero to one MW and the group above 15 MW ($p = 0.009$), as calculated using the Kruskal–Wallis test with Dunn post hoc test.

The reliability of the instrument was confirmed since, from the KR-20 test, the instrument obtained an “acceptable” internal consistency ($\alpha = 0.758$)^[9]. This result suggests that the instrument can measure without error what it proposes; that is, the sanitary safety conditions of food inside domestic kitchens, since the items of each construct can measure it^[10].

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