

# Revista Brasileira de Tecnologia Agroindustrial

ISSN: 1981-3686

https://periodicos.utfpr.edu.br/rbta

# Diagnosis of hygienic-sanitary conditions and corrective measures in restaurants located in the municipality of Cametá-Pará

#### **RESUMO**

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Luiza Helena da Silva Martins luiza.martins@ufra.edu.br orcid.org/0000-0003-1911-4502 Universidade Federal Rural da Amazônia, Belém, Pará, Brasil. The ANVISA law, regulatory agency linked to the Ministry of Health of Brazil, requires Good Manufacturing Practices (GMP) in food. This study aimed to apply the checklist to assess hygienic-sanitary conditions and provide lectures and support materials in restaurants located in the municipality of Cametá-PA. It is a descriptive survey in eighteen restaurants using a quality measurement instrument called a checklist. In addition to the proposal of forms to verify the impact of corrective actions. This verification instrument is part of the requirements required by RDC No. 216/2004 of ANVISA, based on the RDC No. 275, of October 2002 of ANVISA. It was found through the results obtained that all the popular restaurants studied did not satisfactorily comply with the current Brazilian legislation and were classified in groups II and III, that is, they reached a maximum of 75% compliance. Thus, through the diagnosis obtained through the application of the checklist, it is noticed that the restaurant owners have little knowledge about the implementation of GMP; consequently, in none of the evaluated restaurants, these practices are adopted. Thus, they do not comply with the country's current legislation. Corrective actions and delivery of support materials helped the owners. However, it is necessary to support the Health Surveillance, in addition to charging consumers for improvements to these establishments, since adequate sanitary hygienic conditions are an ongoing process.

**KEYWORDS:** Food security. Higiene of food. Good practice.



# INTRODUÇÃO

Food is a basic need for every human being, following the evolution of humanity over time. The concept of food involves the nutritional processes, as well as the culture, rites and customs of the people as a whole (BARBOSA et al., 2018).

With the globalization there were several and significant social, economic, and political changes, and people started to have a different lifestyle, more tiring routines and in environments outside the home. In view of this new reality, there was a growing demand for food services, thus prioritizing ready-to-eat foods, in order to facilitate and increase the time during the day to day. This is demonstrated through data from the Brazilian Association of Bars and Restaurants, which showed that in 2016 154 billion reals, were billed with food services (OLIVEIRA et al., 2016; SANTINI e SEIXAS 2016; MOREIRA; DUTRA, 2017; SOUZA, 2017).

The act of having lunch, dinner and snacks outside the home is already part of the budget of many Brazilian families. In this sense, it is essential that the establishments that offer food services, have control programs that aim at safety from the raw material to the final product, that is, to the consumer, thus reducing foodborne diseases. When restaurants correctly analyze and execute all processes, they are committed to providing safe food and minimizing the risk of food-borne outbreaks (STEFANELLO et al., 2009).

For these establishments, the adoption of Good Manufacturing Practices (GMP) is feasible, which according to Brazilian legislation can be applied in food services, being legislated by Ordinance N°. 1428, of the Ministry of Health and the Resolution of the Collegiate Board-RDC N° 216 (BRASIL, 2004; PEREIRA and ZANARDO, 2020).

According to Pereira and Zanardo (2020) and Forsythe (2013), within a production process, food is considered the biggest limiting factor, since it presents marked perishability, becoming a potential vehicle for the transmission of pathogenic microorganisms. Thus, compliance with current legislation is a determining factor to avoid the risks of microbial contamination during the production process.



It is worth mentioning that there are countless benefits from GMP Program, among which are: better quality and safety products; consumers who become regular and satisfied customers; in addition to the safety and organization of the work environment and consequently employees with better working conditions, which generates better productivity (MELO et al., 2013).

Therefore, these programs aim to improve the hygiene and health conditions, covering all food processing, which leads to a positive fact regarding the protection of public health, applying checklists in the food producing entities, so that it is possible to obtain a diagnosis of the situation and propose adjustments and/or improvements through GMP (De OLIVEIRA et al., 2020).

According to Fidelis et al., (2010), one of the ways of preliminarily evaluating the hygienic-sanitary conditions of a food production establishment and thus offering improvement resources is through the application of a tool that is the checklist.

When analyzing the characteristics of the restaurants in the city of Cametá-PA, it was noticed that their sanitary and hygienic habits were apparently out of date, so we sought to investigate what measures could be taken in relation to these non-conformities.

In this context, the purpose of this study was to apply a checklist to assess sanitary and hygienic conditions and provide lectures and support materials in restaurants located in the municipality of Cametá-PA.

#### **MATERIAL AND METHODS**

#### **SAMPLING**

In order to carry out this research, 18 of the restaurants registered in the Municipal Sanitary Surveillance sector of Cametá-PA were evaluated (all restaurants that agreed to participate in the survey were registered with the Local Health Surveillance). Visits were made to these establishments for the application of the verification checklist based on current legislation (RDC N°. 216/2004 of ANVISA, based on RDC N°. 275, October 2002, ANVISA). The owners of the evaluated restaurants were given the Free and Informed Consent Term (FIC)



(supplementary material), so that it could be signed, in order to demonstrate the reliability and confidentiality regarding the work performed. The signature of this term aimed at the non-disclosure of names, photos and other information that identified the evaluated place. Two copies were signed, one of which remained with the person in charge of the establishment. The application of the verification checklist in the establishments took place on February 2020.

#### **EVALUATION QUESTIONNAIRE**

The descriptive research had as object of study the hygienic and sanitary conditions, the data collection took place from the 3rd to the 20th of February 2020, in 18 popular restaurants in the city of Cametá-PA.

To evaluate Good Practices in establishments, a quality measurement instrument, the checklist (supplementary material), was used. This verification instrument is part of the requirements demanded by RDC N  $^{\circ}$  216/2004 of ANVISA, based on RDC N  $^{\circ}$  275, of October 2002 of ANVISA (BRASIL, 2004) and and WHO - World Health Organization (OMS, 2006).

The approach was carried out with the consent of the person in charge of each studied establishment, by signing a FIC provided in the supplementary material.

The checklist used consisted of 82 questioning items categorized into 5 assessment groups: 1- Buildings and facilities (79 items). 2- Equipment, furniture and utensils (21 items) 3- Handlers (14 items) 4- Food production (33 items) 5- Documentation (25).

A single on-site visit was made, without prior notification to those responsible, so that there were no changes in the work routine, which generated a diagnosis to obtain the final classification average. The data were collected in two ways: By observation regarding the real conditions found and through information obtained directly and later verification by the owner, such as the presentation of documentation and records. During data collection, the 5 groups were analyzed individually.



#### **DATA ANALYSIS**

All items in compliance with the checklist were registered as compliance (C), items that did not meet the questions were registered as non-compliance (NC) and items that do not match the reality of the restaurants were registered as not applicable (NA). Quantitative averages were performed using the Excel program (Microsoft Office Excel 2016).

Based on the percentages of adjustments found in restaurants after applying the checklist, the establishment was classified into groups, according to RDC 216/2004, being:

Group I: as "Good" (from 76 to 100% of adjustments);

Group II: as "Regular" (from 51 to 75% adjustments);

Group III: as "Disabled" (from 0 to 50% of adjustments).

Moreover, the "cutoff point" for restaurants to be classified as adequate was ≥ 76% with regard to hygienic-sanitary conditions, the same cutoff point was used to individually analyze the 5 groups in which the checklist for participation in corrective actions. Through this classification, there was a diagnosis regarding the services provided to customers by popular restaurants in the city.

# **CORRECTIVE ACTIONS**

The inadequacies found in the establishments were put into an action plan, in the form of lectures and training with the operational team, emphasizing the main aspects of food security.

Corrective actions took place in two days in the form of theory and practice. On the first day, everyone answered a 15-question questionnaire (supplementary material) with yes or no answers on personal and environmental hygiene. After the answers, several issues were addressed, such as food safety (food poisoning, main microorganisms, and food contamination), work safety and the environment, in addition to a dynamic on the correct hand hygiene.



On the second day, the subjects covered were food storage, waste care, cleaning of equipment to be used in the area of food processing and cleaning. The practical activities carried out with the handlers were as follows: dilution of products for sanitizing vegetables and fruits and the environment. At the end of the training, the form with 15 questions was applied again in order to assess the impact of corrective actions.

#### SUPPORT MATERIAL

An informative GMP material and Standard Operating Procedures (SOP) were delivered to each of the restaurant owners participating in the survey. In the form of an illustrated booklet and freely distributed, as well as illustrative posters on the correct hand hygiene in order to clarify and explain the procedures that must be applied in restaurants during the food production process, in order to guarantee better quality of the elaborated product.

#### STATISTICAL ANALYSIS

The results obtained were tabulated and analyzed using the Microsoft Office Excel 2016 program to obtain bar graphs for better visualization of the study results.

Our model met all the assumptions for the parametric test, such as the normal distribution (W=0.97729, p-value = 0.001472) tested by the Shapiro-Wilk normality test. Thus, to test if there are differences between the total averages of the companies for each group, we performed the Analysis of Variance (ANOVA) and the Tukey test of multiple average comparisons with 95% confidence with the aid of R software and the graphic was produced using the Software R ggplot2 package as well.

#### **RESULTS AND DISCUSSION**

# HYGIENIC-SANITARY CONDITIONS OF RESTAURANTS

As shown in Table 1 on hygienic-sanitary conditions, it is possible to observe that all popular restaurants studied did not satisfactorily comply with the current Brazilian Resolution, which corresponds to hygienic-sanitary conditions. This fact



is worrying regarding the exposure to health and safety risks of all those involved in the establishments.

Table 1 - Average percentage of accordance of sanitary conditions in restaurants located in the municipality of Cametá-PA

1	41.7
2	21.4
3	37.7
4	59.0
5	25.6
6	59.6
7	36.5
8	53.2
9	49.0
10	44.5
11	24.2
12	55.8
13	46.2
14	48.1
15	52.6
16	42.2
17	42.9
18	53.2

Source: Authors (2020).

According to the data presented (Table 1), none of the eighteen restaurants evaluated were classified in the "good" group (Group I), six of them were classified as "regular" (Group II) and twelve of them as "disabled" (Group III) that are classified in group III, are more likely to be contaminated (BRANCO et al., 2016). The overall average suitability of restaurants was 44.07%. The restaurant 6 had the highest percentage of accordance (59.6%), because it was in accordance when compared to others.

Non-accordance are evident both in the physical structure and in the way food is produced in restaurants; the results are therefore unsafe food. Lima (2016), found a superior result, where 9 out of the 10 restaurants studied reached an average of 70% accordance. For Silva et al., (2008), who through the Popular Restaurants program evaluated the Food Security policy and the hygienic-sanitary quality in the State of Rio Grande do Norte, he concluded that these establishments did not offer sanitary quality food.

De Oliveira et al., (2020), when verifying the index of the presence of actions for sanitary hygienic control of the produced food and the legal accordance of the



services to the GMP standards in 34 food service establishments. They found different results to those found in the present study, where 6% of establishments were in-group I (good) and 47% in-group II (regular) and 47% in-group III (insufficient).

Mota et al., (2019), when evaluating the sanitary and sanitary conditions in the kitchen that offers meals and snacks from a supermarket in Cariri Cearense, it was classified in group III (insufficient), where the items evaluated were satisfactory in only 47%. Reinher (2018) in his study to assess the hygienic-sanitary conditions in bakeries in the municipality of Realeza - PR, concluded that changes were necessary, as the establishments fell into group II (regular), as well as some of those found in the present study.

There is a high percentage of non-conformities for the evaluated items, with all eighteen restaurants studied out of compliance, which precarious conditions in the marketing and preparation of food and failures with sanitary legislation. Therefore, unfortunately, contamination risks are present in practically all stages of production, due to poor manufacturing practices.

#### **Buildings and Facilities**

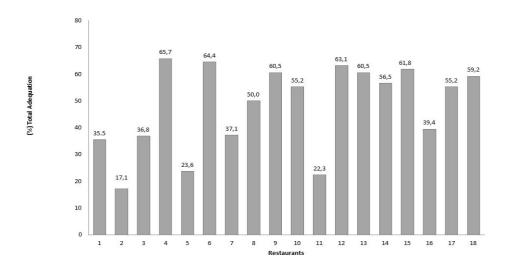
Figure 1 has the average suitability for buildings and facilities, it is possible to observe that the averages were varied, the highest average was 65.79% (restaurant 4) and the lowest was 17.11% (restaurant 2). These fluctuations in the means of adjustment are linked to the individual difference in the purchasing power of the owners. There are those who have greater financial conditions to build and renovate their establishments and thus keep them more healthy, and not because they have knowledge about the importance of these improvements. Well, there is no requirement by the Health Surveillance-VISA for these improvements.

Restaurants 2, 5, 11, had the lowest averages, as unusual non-conformities were found in the external areas, with disused materials conducive to the presence of vectors and pests, which can contaminate food. The same places of the establishments were also residences, causing undue flows of people, ceilings and



walls in a state of poor conservation, as well as doors with material that is difficult to clean.

Figure 1- Average percentage of accordance of sanitary hygienic conditions in restaurants for buildings and facilities



Source: Authors (2020).

The overall average suitability for this item was 48.02%. Lima (2016), found for this block an average superior of 59% of accordance. Some similar Non-accordance found between the two mentioned studies were the following: objects in disuse in the external and internal area, restaurants in spaces that were not planned for this purpose (not contributing a correct flow in this location), doors without automatic closing, and non-embedded electrical installations and lack of manufacturing record.

De Oliveira et al., (2020), when studying the index of actions for hygienic-sanitary control of the food produced and legal adaptation of the services to the GMP standards in 34 food service establishments. They detected some irregularities also found in this study in the physical installations: floors, walls and ceilings in a state of deterioration, with a percentage still higher than this, of 63.8%.

Pereira and Zanardo (2020), when analyzing the Management of Good Practices in a school canteen, found a lower value of 39% of conformities. The average compliance for this item found by Mota et al., (2019) in his research on

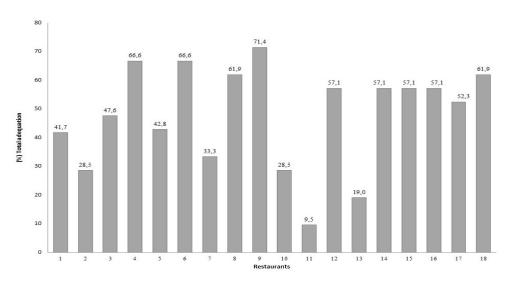


hygienic-sanitary conditions in the kitchen of a supermarket that offers meals and snacks located in Cariri Cearense, was an approximate value of 47.06% compliance.

#### Equipment, Furniture and Utensils

In relation to this item (supplementary material), the lowest average result was from restaurant 11 and 13, with the percentage of 9.52% where it did not have a technician responsible for hygiene, in addition to being performed with inappropriate time, frequency and products, which makes it ineffective at the risk of microbiological contamination. The highest average was that of restaurant 9 at 71.43%, as shown in Figure 2.

Figure 2- Average percentage of accordance of sanitary hygienic conditions of restaurants regarding equipment, furniture and utensils



Source: Authors (2020).

The general average result of accordance was 47.81%. A different value to that found by Melo (2013), which was 57.1%, when evaluating UANs and Mayara et al., (2015), in their research the value found was 73% accordance, in common the inadequacies also found were in relation to the incorrect frequency of cleaning equipment and utensils, in addition to the absence of records of these operations. For Santini and Seixas (2016), one of the means of contamination is the equipment and utensils, a problem that occurs due to incorrect hygiene, so it is important that the handlers are trained and aware of the correct way, ensuring the integrity of the food.



De Oliveira et al., (2020), on the index of actions for sanitary hygienic control of food produced and legal adaptation of services to GMP standards in 34 food service establishments, found a higher percentage of 59.5% of conformities, where one of the non-accordance was also the inadequate frequency of cleaning. Pereira and Zanardo (2020), when analyzing the Management of Good Practices in a school canteen, found an accordance value for this item lower than 41%. Stoffel and Piemolini-Barreto (2018), when assessing the hygiene of equipment and installations, found the compliance rate to be much higher than 82.34%.

Mota et al., (2019) in their research on hygienic-sanitary conditions in the kitchen of a supermarket that offers meals and snacks located in Cariri Cearense, found an index of 50% of adjustments, one of the non-accordance also found was the lack of a professional able to coordinate this function. Tabela 2 mostra as médias das notas atribuídas para as três amostras de queijo.

#### Handlers

Regarding the manipulators, through Figure 3 it is possible to observe the lowest and highest average suitability, 7.14% (restaurant 2 and 5) and 64.29% (restaurant 3), respectively.

The importance of the manipulators in the production process is indisputable, so their training must be frequent and continuous, which does not occur in the restaurants evaluated, as they claim that the Health Surveillance (VISA) does not provide training courses. For De São José et al., (2011) the manipulator exerts a strong influence through his acts with regard to the occurrence of foodborne disease and in return on the quality of the final product. The general average of accordance for this item in the present study was 36.50%. In a study De Oliveira (2017), obtained an accordance value of 72.8%, a value much higher than that found in this study, Vasques and Madrona (2016), when evaluating this item, found several non-conformities similar to those of the present study, such as incorrect training periodicity about hand hygiene, food and foodborne disease.



Figure 3- Average percentage of accordance of sanitary hygienic conditions in restaurants regarding handlers

Source: Authors (2020).

Vieira et al., (2020), when evaluating the importation of the implementation of Good Practices in a supermarket in the city of Patos-PB, found a lower percentage of 28.57% of adjustments, where according to the authors the main problem was also the lack of hygiene on the part of the handlers.

In the study of De Oliveira et al. (2020), on the index of actions for sanitary hygienic control of food produced and legal adaptation of services to GMP standards in 34 food service establishments, obtained a higher value of 46.6% of compliance. Where the common non-accordance were the use of adornments by handlers, in addition to the fact that they speak during food preparation.

#### **Food Production**

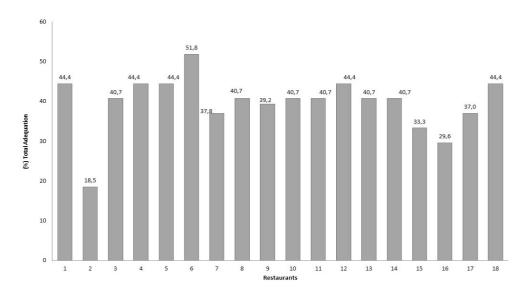
The lowest mean of accordance with regard to food preparation was found in restaurant 2 of 18.52% and the highest in restaurant 6 of 51.85%, as shown in Figure 4.

Restaurant 2 was not concerned about the inspection of raw materials, ingredients and packaging being carried out in the same place where food was prepared, the food was exposed at inappropriate temperatures, ready foods in very distant periods (days) were mixed for resellers, in addition to raw materials being stored in unhealthy locations. All of these non-conformities lead to



contamination of food and consequently the health of consumers by foodborne disease

Figure 4- Average percentage of accordance of the hygienic-sanitary conditions of Restaurants regarding the preparation of food



Source: Authors (2020).

Production is an important step; in fact, it involves receiving the raw material and delivering the final product. According to Prado et al., (2014), it is necessary to have knowledge about all individual processes, in addition to regularization by the current legislation.

The restaurant 6 was the only one that had reception control spreadsheets and a pre-preparation area (dirty area), separated from the preparation area by a physical barrier. The main problem found in restaurants is related to the inadequate storage of raw materials.

Pereira and Zanardo (2020), when analyzing the Management of Good Practices in a school canteen, obtained a superior rate of 69% of compliance. Vieira et al., (2020), when evaluating the importance of implantation of Good Practices in a supermarket in the municipality of Patos-PB a percentage much lower than 19% for this item. Showing the importance of implementing GMP for the improvement of establishments and food security.

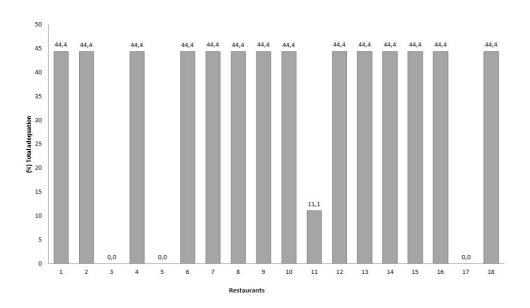


It is very important that the owners of such establishments are aware of investing in improvements, which can favor the quality and safety of food and consumer health, thus ensuring greater reliability in their business.

#### Documentation

As shown in Figure 5, the overall average percentage of accordance was 35.17% (regular), with 3 establishments not having any documentation, establishment 5, only had the MGMP, and the others had an average of 44.42%.

Figure 5- Average percentage of accordance of sanitary hygienic conditions of Restaurants regarding documetation



Source: Authors (2020).

It was also possible to observe that those who had a Manual of Good Manufacturing Practices (MGMP) and Standardized Operating Procedures (SOP) did not use it correctly, as they did not have the habit of consulting them in cases of doubt. According to the owners, they are not required by VISA and were unaware of their importance. The lack of documentation was also found by Oliveira et al., (2016), in 93.7% of cases, in Rodrigues et al., (2017) reaching 94%, in Santini and Seixas (2016) and in 100% of establishments evaluated by Santos (2015).

De Oliveira et al., (2020), when analyzing the index of actions for hygienicsanitary control of food produced and legal adaptation of services to GMP



standards in 34 food service establishments for this item was lower, with a value of 5, 9%, in these establishments. As well as in those evaluated in this study, some did not have the documentation, nor technicians, to guarantee the quality. Mota et al., (2019) in their research on hygienic-sanitary conditions in the kitchen of a supermarket that offers meals and snacks located in Cariri Cearense, the non-accordance rates were 100%, as they did not have MGMP and SOP.

It was observed that the documentation (MGMP and SOP) were kept in a place that is difficult to access, in some cases in the homes of the owners, showing its incorrect use and ignorance regarding its importance in the production stages. According to Rodrigues et al., (2017), the presence of these documents is essential for the correct execution throughout the process, as well as for obtaining quality and safety products from consumers.

#### **CORRECTIVE ACTIONS**

It was possible to observe that on both days of lectures the interest on the part of the participants was evident, due to punctuality and participation. The main non-accordance encountered were with the hygiene of the handlers and the absence or incorrect use of MGMP and SOP.

In the Table 2, it is possible to observe the positive impact caused by corrective actions. The correct forms of food Manufacturing and personal hygiene were the subjects addressed with the greatest emphasis. Handlers are fundamental to the quality of the product, as they come into contact with the food at all stages of its production and play an important role in the entire production process. Therefore, there is a need for training at all stages, which include necessary care during the production, transportation, storage and delivery of products (SOTO et al., 2009; SILVA et al., 2012).

Lima and Ferreira (2013) observed in their study that after applying a questionnaire containing 15 questions regarding knowledge about GMP of foods, employees belonging to the kitchen sector presented 82% of correct answers.



Table 2 - Number of correct answers before and after the lectures and training applied to the operational team

Restaurant	Correct answers	
	Before	After
1	5	11
2	6	11
3	5	12
4	4	11
5	4	11
6	4	11
7	5	13
8	3	11
9	3	12
10	3	11
11	5	11
12	3	13
13	5	13
14	3	12
15	5	12
16	5	12
17	9	13
18	9	12

Source: Authors (2020).

Pereira and Zanardo (2020), when analyzing the management of Good Practices in a school canteen, also obtained positive results when providing training to handlers, the most satisfactory results were for the items: cleaning of equipment, furniture and utensils (85%) and Handlers (82%).

For Mota et al., (2019), the existence of a professional trained to control and observe activities in the productive sector is extremely necessary, since it does not exist, it is difficult to maintain the quality of products and consumers. In addition, periodic training of handlers and others involved in food establishments is necessary.

For Santos et al., (2012) professionals who do not have training in the area of food Manufacturing, will reflect negatively when exercising their functions in restaurants, such as risk to consumers' health and loss of credibility in the market. Therefore, it is extremely important that there is continuous training.

It is worth mentioning that most of the non-accordance found can be solved at low cost, requiring only greater interest on the part of owners and consumers. In addition, to the intervention of the local supervisory body (VISA), which must be more active, since they only carry out visits, which are rarely monthly, requiring



only the payment of the fee to obtain the License and Sanitary Permit (GAVA, 1977).

The MGMP, SOP, and posters were given to the participants, who were made aware of the importance of their daily consultation for any doubts on the part of anyone involved in the production process, in addition to the presentation when requested by the competent bodies. According to Kalinowski (2010), the Manual of Good Practices is a strong ally for the implementation of good practices, which also ensures the hygienic-sanitary conditions of food.

With the adoption of Good Practices in restaurants, as well as lectures and training on personal hygiene and food safety, it was observed that the handlers were more motivated and easily adapted the proposed changes, especially in relation to personal hygiene care and utensils, equipment, etc. There was also a significant improvement in relation to food Manufacturing. Owners and employees are open to future adaptations and innovations to improve their workplace.

According to the local Health Surveillance, the lack of support from owners, government officials, and customers, in addition to the inadequate number of means of transportation and personnel, makes frequent inspection in establishments difficult.

The implementation of good practices in food services is essential, as it aims to adapt the establishment to ANVISA standards, not only the physical structure but also the quality of its products, the safety of employees and consumers (BUZINARO and GASPAROTTO, 2019).

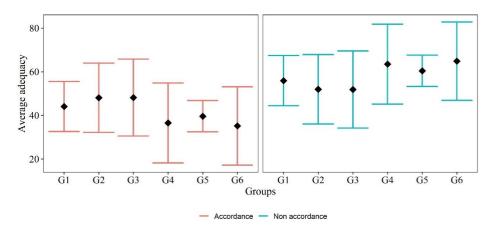
It is important to remember that although the microbiological issue is undoubtedly one of the main aspects when talking about GMP, we must also consider the physical and chemical hazards related to food production, which were not observed in this work, but are extremely important when it comes to good manufacturing practices.

## **ANOVA ANALYSIS**

The statistical analysis performed for this work is shown in Figure 6.



Figure 6. (A) Graph of ANOVA for total average with standard deviation of companies for each group, which is divided between the answers that are in accordance and others that are non-accordance.



G1= Hygienic-sanitary conditions of restaurants; G2= Buildings and facilities; G3= Equipment, furniture and utensils; G4= HANDLERS; G5= Food production; G6= Documentation.

Source: Authors (2020).

By ANOVA test (Figure 6), it was observed that there is a significant difference between the means of sanitary accordance between the groups (F: 7,721, p <0.05). Among them, G4-Accordance differs significantly from G4-Non accordance (p-value = 0.0000203), the G5-Accordance group differs from G5-Non accordance (p-value = 0.0037181) and the G6-Accordance group differs from G6- Non accordance (p-value = 0.0000015).

#### **CONCLUSION**

Through the diagnosis obtained through the application of the checklist, it is clear that the restaurant owners have little knowledge about the implementation of Good Manufacturing Practices; consequently, in none of the evaluated restaurants these practices are adopted. Thus, they do not comply with the country's current legislation. When we analyzed the ANOVA test, it was observed that there was a significant difference between the means of sanitary accordance between the groups

The implementation of corrective actions and delivery of support materials will assist the owners. However, it is necessary to support the Health Surveillance, in addition to charging consumers for improvements to these establishments, since good sanitary conditions are an ongoing process.



# Diagnóstico das condições higiênicosanitárias e medidas corretivas em restaurantes localizados no município de Cametá-PA

## **RESUMO**

A Boas Práticas de Fabricação (BPF) em alimentos é exigida por lei pela Agência Nacional de Vigilância (ANVISA). Com o presente estudo, objetivou-se aplicar checklist para avaliar as condições higiênico sanitárias e disponibilizar palestras e materiais de apoio em restaurantes localizados na cidade de Cametá-PA. Trata-se de uma pesquisa descritiva em dezoito restaurantes para avaliar as boas práticas nos estabelecimentos, foi utilizado um instrumento de medição de qualidade, o checklist. Além da proposta de formulários para verificar o impacto das ações corretivas. Este instrumento de verificação faz parte dos requisitos exigidos pela Resolução da Diretoria Colegiada- RDC nº 216/2004 da ANVISA, com base na Resolução da Diretoria Colegiada -RDC n° 275, de outubro de 2002 da ANVISA. Verificou-se pelos resultados obtidos que todos os restaurantes populares estudados não atenderam de maneira satisfatória a Legislação Brasileira vigente, e foram classificados nos grupos II e III, ou seja, atingiram o máximo de 75% de conformidade. Assim, através do diagnóstico obtido pela aplicação do check list, percebe-se que os proprietários dos restaurantes detêm pouco conhecimento sobre a implementação das Boas Práticas de Fabricação, consequentemente, em nenhum dos restaurantes avaliados são adotadas essas práticas. Dessa forma não se encontram em conformidades com a legislação vigente do país. A realização das ações corretivas e entrega de materiais de apoio, auxiliarão os proprietários. Porém, faz-se necessário o suporte da Vigilância Sanitária, além da cobrança por melhorias por parte dos consumidores a esses estabelecimentos, uma vez que as boas condições higiênico sanitárias é um processo contínuo.

PALAVRAS-CHAVE: Segurança alimentar. Higiene dos alimentos. Boas práticas.



#### **REFERÊNCIAS**

BARBOSA, L. B., et al. Avaliação das boas práticas higiênico-sanitárias em food trucks. **Motricidade**, v. 14. n. 1, p. 226-231, 2018.

BRANCO, C. C.F. C., et al. Panorama sanitário dos estabelecimentos alimentícios do mercado de Picos, Piauí. **Nutrivisa**, v. 2, n. 3, 2016. https://doi.org/10.17648/nutrivisa-vol-2-num-3-e

BRASIL. Dispõe sobre regulamento técnico de boas práticas para serviço de alimentação (Resolução RDC n°. 216, de 15 de setembro de 2004). **Diário Oficial [da] República Federativa do Brasil**, 2004.

BUZINARO, D. V. C; GASPAROTTO, A. M. S. Como a implementação das Boas Práticas de Fabricação (BPF) auxiliam a competitividade e a qualidade em uma indústria. **Revista Interface Tecnológica**, v. 16, n. 2, p. 371-382, 2019. https://doi.org/10.31510/infa.v16i2.662

DE LIMA, L. B. Avaliação das condições higiênico-sanitárias de Restaurantes Populares no Rio Grande do Norte. 2016. Trabalho de Conclusão de Curso, Universidade Federal do Rio Grande do Norte, Natal, 2016. Disponível em: <a href="https://monografias.ufrn.br/jspui/handle/12345678/3190">https://monografias.ufrn.br/jspui/handle/12345678/3190</a>>. Acesso em 20 de março de 2020.

DE OLIVEIRA, A. M. C. et al. Adequação de serviços de alimentação às boas práticas de fabricação. **Conexões-Ciência e Tecnologia**, v. 14, n. 1, p. 30-36, 2020. <a href="https://doi.org/10.21439/conexoes.v14i1.1830">https://doi.org/10.21439/conexoes.v14i1.1830</a>

DE OLIVEIRA, C. C. et al. Boas práticas de manipulação em estabelecimentos produtores de alimentos de uma cidade da região noroeste do Rio Grande do Sul. **Segurança Alimentar e Nutricional**, v. 24, n. 2, p. 141-152, 2017. https://doi.org/10.20396/san.v24i2.8648498

DE SÃO JOSÉ, J. F. B.; COELHO, A. Í. M; FERREIRA, K. R. Avaliação das boas práticas em unidade de alimentação e nutrição no município de Contagem-MG. **Brazilian Journal of Food & Nutrition/Alimentos e Nutrição**, v. 22, n. 3, 2011

FORSYTHE, Stephen J. **Microbiologia da segurança dos alimentos.** 2 ed. São Paulo: Artmed, 2013.

GAVA, Altanir Jaime. **Princípios de tecnologia de alimentos**. 1 ed. São Paulo: NBL, 1977.



KALINOWSKI, Marcos et al. MPS. BR: promovendo a adoção de boas práticas de engenharia de software pela indústria brasileira. In: XIII Congreso Iberoamericano en'' Software Engineering'' (CIBSE), Cuenca, Equador. sn, 2010.

LIMA, A. P. P.; FERREIRA, F. V. Conhecimento dos manipuladores de alimentos de um serviço de alimentação de hotel de luxo sobre boas práticas. **Nutrire**, v. 38, n. Suplemento, p. 333-333, 2013.

MELO, J. F. et al. Avaliação das condições de higiene e da adequação às boas práticas em unidade de alimentação e nutrição no município de Porto Alegre – RS. **Alimentos e nutrição Araquara**, v. 24, n.2, p. 182, 2013.

MOREIRA, R. C; DUTRA, A. A oferta de alimentos seguros em restaurante comercial do tipo selfservice. **Hig. Aliment**, v.31, n.268/269, p. 128-133, 2017.

OLIVEIRA, J. M. et al. Condições higiênico-sanitárias de unidades produtoras de refeições comerciais localizadas no entorno da Universidade Federal de Sergipe. **Segurança Alimentar e Nutricional,** v.23, n.2, p.897-903, 2016. https://doi.org/10.20396/san.v23i2.8644820

ORGANIZAÇÃO MUNDIAL DA SAÚDE. **Doenças de Origem Alimentar-Enfoque para Educação e Saúde**. Editora Roca, 2006.

PEREIRA, W. B. B; ZANARDO, V. P. S. Gestão de Boas Práticas em uma cantina escolar. **Vivências**, v. 16, n. 30, p. 193-200, 2020. https://doi.org/10.31512/vivencias.v16i30.152

PRADO, B. G. et al. Pontos críticos de controle na qualidade higiênico-sanitária do preparo de sushis e sashimis no município de São Vicente, São Paulo. **Segurança Alimentar e Nutricional**, v. 21, n. 1, p: 359-372, 2014. https://doi.org/10.20396/san.v21i1.1661

REINEHR, L. I. **Diagnóstico das condições higiênico-sanitárias de panificadoras de Realeza–PR.** Trabalho de Conclusão de Curso. Universidade Tecnológica Federal do Paraná. 2018. Disponível em:

<a href="http://repositorio.roca.utfpr.edu.br/jspui/handle/1/9880">http://repositorio.roca.utfpr.edu.br/jspui/handle/1/9880</a>>. Acesso em 10 de abril de 2020.

RODRIGUES, S. P. L. et al. Avaliação da qualidade higiênico-sanitária de restaurantes orientais (japonês e chinês) em Aracaju. **Revista Brasileira de Higiene e Sanidade Animal**, v. 11, n. 3, p. 289 – 306, 2017.



SANTINI, V; SEIXAS, F. R. Avaliação das condições higiênico-sanitárias de restaurantes comerciais da cidade de Rolim de Moura –RO. **Revista Científica da UNESC**, v. 14, n. 1, p. 02-10, 2016.

SANTOS, A.A. et al. Avaliação da qualidade microbiológica de sushi comercializado em restaurantes de Aracaju, Sergipe. **Scientia Plena**, v. 8, n. 3 (a), 2012.

SANTOS, D. F. S. Avaliação das boas práticas de fabricação em restaurantes selfservice da cidade de Itapeva, estado de São Paulo. **Revista Nutrir,** v. 1, n. 4, 2015.

SILVA, A. V.; SILVA, K. R. A.; BESERRA, M. L. S. Conhecimento do controle higiênico-sanitário na manipulação de alimentos em domicílios: revisão bibliográfica. **Rev nutrir gerais**, v. 6, n. 10, p. 918-32, 2012.

SOTO, F. R. M. et al. Aplicação experimental de um modelo de conduta de inspeção sanitária no comércio varejista de alimentos. **Food Science and Technology**, v. 29, n. 2, p. 371-374, 2009. <a href="https://doi.org/10.1590/S0101-206120090002000">https://doi.org/10.1590/S0101-206120090002000</a>

SOUZA, M. A. de. Segurança alimentar em restaurante fabricante e fornecedora de refeições coletivas no município de Uberlândia – MG – Um estudo de caso. 2017. 81 f. Dissertação – Instituto Federal do Triângulo Mineiro, Uberaba, 2017.

STEFANELLO, C. L. et al. Percepção sobre Boas Práticas por cozinheiras e auxiliares de cozinha de uma UAN do noroeste do Rio Grande do Sul. **Vivências**, v. 5, n. 8, p. 93-98, 2009.

STOFFEL, F; PIEMOLINI-BARRETO, L. T. Avaliação de boas práticas em restaurante especializado em culinária oriental. **Higiene Alimentar**, v. 32, n. 276/277, p. 53-57, 2018.

VASQUES, C. T; MADRONA, G. S.. Aplicação de checklist para avaliação da implantação das boas práticas em uma unidade de alimentação e nutrição. **Hig. aliment**, v. 30, n. 252/253, p. 53-58, 2016.



Recebido: 08 jul. 2020 Aprovado: 19 out. 2020 Publicado: 29 dez. 2020 DOI: 10.3895/rbta.v14n2.12571

PORTILHO, M. D. et al. Diagnosis of hygienic-sanitary conditions and corrective measures in restaurants located in the municipality of Cametá-Pará. R. bras. Tecnol. Agroindustr., Francisco Beltrão, v. 14, n. 2, p. 3312-3334, jul./dez. 2020. Disponível em: <a href="https://periodicos.utfpr.edu.br/rbta">https://periodicos.utfpr.edu.br/rbta</a>>. Acesso em: XXX.

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