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AVALIAÇÃO DOS HÁBITOS HIGIÊNICO-SANITÁRIOS NA MANIPULAÇÃO DE ALIMENTOS POR CONSUMIDORES DE NOSSA SENHORA DA GLÓRIA – SERGIPE

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EVALUATION OF HYGIENIC AND SANITARY HABITS IN FOOD HANDLING BY CONSUMERS IN NOSSA SENHORA DA GLÓRIA - SERGIPE

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ABSTRACT

The World Health Organization (WHO) estimates that around 600 million foodborne illnesses occur annually. Many of these illnesses are associated with incorrect food safety and handling practices in the industrial or residential environment. And although consumers show concern with food safety, statistics show that during the purchase, handling, and storage of food, the necessary precautions to protect health are not noticed. In addition, aspects related to food hygiene and conservation, especially in the domestic environment, are often underreported and underreported in the literature. Still, they are no less important for public health since about 37% of DTA's in recent years registered in Brazil occurred in the domestic environment, evaluate habitshygienic-sanitary in food handling by consumers of Nossa Senhora da Glória – Sergipe. Interviews were conducted with 155 consumers aged between 18 and 74 through an online questionnaire carried out by the Google forms platform. The survey results indicated that around 70% of consumers interviewed in Nossa Senhora Glória (SE) demonstrated inadequate practices and care about hygiene, handling, and preservation of food in the home environment, especially concerning the hygiene of the food packaging surface. Therefore, disseminating knowledge about the importance of Good Handling Practices in the home environment and

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determining educational actions are essential for consumers to change their habits and perceptions about hygiene and food safety.

Key words: food safety, sanitation, food preservation.

INTRODUCTION

Consumers have been increasingly concerned about quality and food safety. For this reason, issues such as proper hygiene, reliable production methods, and food safety have been factors with such great importance for deciding at the time of purchase. Regarding food quality for consumers, product safety is always a determining factor since nonconformities can compromise their health (PINHEIRO et al., 2011).

Although different technologies are being developed to guarantee the supply of products exempted or counting within the safe limits of pathogenic microorganisms to consumers, some FBD outbreaks have frequently been recorded, making the consumer extremally aware of the processes of production and food sanitation (SILVA, 2018).

The study of consumer behavior has been critical to the food industry to get to know their consumption habits and perceptions, values, culture, and philosophy. Awareness in political, social, and environmental terms of the origin of food and its production processes has become even more extensive for Brazilian consumers. In addition, the increase in FBD has made many consumers reconsider the type of products bought and who they bought it from (CORREIA, 2017).

Thus, the present study aimed to understand the hygienic-sanitary habits of the consumers in Nossa Senhora da Glória, SE, in food handling in the home environment.

THEORETICAL FOUNDATION

Nossa Senhora da Glória

The territory of Alto Sertão Sergipano is located in the northwest region of the State of Sergipe, consisting of seven municipalities: Canindé de São Francisco, Gararu, Monte Alegre de Sergipe, Nossa Senhora da Glória, Nossa Senhora de Lourdes, Poço Redondo and Porto da Folha (OLIVEIRA, 2015).

The municipality of Nossa Senhora da Gloria stands out for its dairy production, producing about 322 thousand liters per day, highlighting itself as Sergipe's central milk production hub.

This productive stability has repercussions on the growing number of cheese factories and, consequently, on the more excellent production and marketing of artisanal cheese.

The family producers are responsible for a significant portion of the cheese market, contributing to increased job offers and income in rural properties (SILVA & SILVA, 2016).

That way, consumers are exposed to physical, chemical, and biological hazards that might affect their health by consuming food with low hygienic-sanitary conditions (JESUS et al., 2018).

The studies related to the diagnosis of hygienic-sanitary habits of consumers in Nossa Senhora da Glória regarding consumption and food manipulation in the home environment are still relatively scarce, despite being a theme of great importance since in Brazil, the FBD outbreaks mainly occur in home environments (BRASIL, 2019).

Food hygiene and sanitation

Food hygiene and sanitation are fundamental tools for maintaining food preservation, favoring the purchase of a product with good nutritional and sensory characteristics, and offering a product with high hygienic-sanitary standards that do not put the consumer's health at risk (COELHO, 2014).

The improvement of hygiene processes in food industries and residences has been a great need due, among other factors, to the development of new products, new technologies of processing, consumer requirements, and public FBD reports, especially those of bacterial origin (FONSECA, 2017).

Sanitation is divided into two well-defined steps: cleaning and sanitizing. Cleaning has its primary purpose: removing organic, inorganic, or mineral waste, whereas sanitizing has the primary function of the inactivation of pathogenic microorganisms and decreasing the deteriorating count to safe levels (LOPES, 2018).

The fundamental steps of the cleaning process include pre-rinse, detergent application, and rinse (ANDRADE, 2008).

Pre-rinse is responsible for removing about 90% of water-soluble waste, such as carbohydrates. Water temperature should be around 40°C because if it is above 60°C, protein denaturation may occur; if below 40°C, fat solidification occurs (ANDRADE, 2008).

Subsequently, washing is performed with the application of alkaline and acid detergents to remove organic waste and mineral salts from the surfaces (LOPES, 2018).

Although detergents (alkaline or acids) used in the cleaning step may remove and decrease the microbial load present on the surface, these chemical compounds are not capable of inactivating them to an appropriate counting, being required for the sanitizing step to be performed (LOPES, 2018).

The sanitizing step has as its primary function the inactivation of pathogenic microorganisms that were not eliminated in the cleaning action and should be performed right before equipment or utensils. Once after the cleaning step, there might be a multiplication of undesirable microorganisms that have not been eliminated yet or even new contamination on the surface (ANDRADE, 2008).

The sanitizing step is performed by applying physical and chemical methods. Heat and radiation are the most commonly used biological agents (SILVA et al., 2010).

The consumer's sanitizing process in the food preparation happens through some physical methods. Most consumers use heat for food sanitizing by immersing the product in boiling water at around 80°C. This method removes pathogenic microorganisms more efficiently but cannot be used in all kinds of foods as it can interfere with the physical and sensory characteristics (LOPES, 2018).

Chemical sanitizing is performed with sanitizing agents consisting of chemicals. The most known for controlling microorganisms are chlorinated compounds and alcohols, especially for home use (LOPES, 2018).

Foodborne Diseases (FBD)

The World Health Organization (WHO) estimates that 600 million FBD occur annually due to incorrect safety and food handling practices (RODRIGUES et al., 2020).

FBD can be understood as a clinical manifestation generated by the intake of water or foods contaminated by pathogenic microorganisms. Ingestion of these contaminants can lead to severe risks to the consumer’s health (intoxication or food infection) and be a challenge for public health (FERRARI & FONSECA, 2019).

FBD might be caused by different biological agents, such as bacterias (*Salmonella, Campylobacter, Escherichia coli*.); parasites (E*ntamoeba histolytica, Toxoplasma, Cryptosporidium parvum*); viruses (Hepatitis A, *Norwalk virus, Rotavirus*, etc.), fungi (*mycotoxins*) and toxins produced by specific microorganism (botulinum toxin, aflatoxin, etc.) (ANDRADE, 2008).

The major diseases caused by the ingestion of this microorganism and microbial toxin vehicle are infection, infection, and food intoxication (SANTOS, 2019).

Among the main contributing factors for the occurrence of FBD outbreaks, highlighted the food manipulators themselves, with inadequate personal hygiene practices, use of raw materials contaminated in raw food preparations, failures in the hygiene processes of utensils and equipment used in the preparation of food and use of low-quality water (SANTOS, 2019).

According to the Ministry of Health of Brazil (2019), in 2018 were reported 503 FBD outbreaks, with 6,803 patients, 731 hospitalized, and 9 FBD-related deaths. The main etiological agents responsible for FBD in Brazil are *E. coli, Salmonella spp, S. aureus, Coliforms, Shigella spp, B. cereus*, and *Clostridium perfringens* (BRASIL, 2019).

According to the Ministry of Health (MS), in Brazil, the distribution of outbreaks occurs mainly in residences, with 37.2% of the recorded cases. Secondly, the restaurants, bakeries, or similar, with 16.0% of the records of occurrences (BRAZIL, 2019), although in practice, this percentage should be higher due to the sub-notification of cases and FBD outbreaks in Brazil.

Sub notification is the lack of information about a compulsory notification disease, a complex reality faced throughout the Brazilian territory, especially in the north and northeast of Brazil. This problem generates high unnecessary costs and weakens the public health system, causing damage and insufficiency in disease prevention and control measures (MEGDA et al., 2013).

METHODOLOGY

Location of the study

The study was conducted from April 2021 to July 2021 through an online survey by the Google Forms platform to evaluate the hygienic-sanitary habits of food manipulators in a home environment in Nossa Senhora da Glória, Sergipe.

Identification and characterization of consumers

Developed the study with the participation of consumers from different social classes aged 18 to 74 years old, who had the habit of preparing food in their residences.

According to available data from the Brazilian Institute of Geography and Statics

(IBGE), the city of Nossa Senhora da Glória (SE) had a population of 22,664,000 people aged between 18 and 74 years old in the last census of 2010. The number of consumers surveyed was calculated according to the equation system proposed by Barbetta (2002):

$$n0 = \frac{1}{Eo^2} = \quad \text{(Equation 1)}; \; n = \frac{\mathrm{N}\,.\,\mathrm{n0}}{\mathrm{N+n0}} \quad \text{(Equation 2)}$$

Where: n: size of corrected sample; N: population size; n0: first approximation to the actual size of the sample; E0: acceptable sample error. Considering the margin of error of 8%, there is the first approximation of the actual size of the sample from Equation 1and Applying this data to Equation 2, was possible to calculate the size of the corrected sample, n= 155 consumers.

Survey questionnaire

A previously structured questionnaire (survey type) with 29 objective and dissertation questions was elaborated for assessing hygienic-sanitary habits during food manipulation applied to handlers from 18 to 74 years old in the city of Nossa Senhora da Glória (SE). The questions included the age group, degree of education, family income, hand hygiene habits, type of food conservation, fruits, vegetables, and utensils cleaning process, among others.

RESULTS AND DISCUSSION

In between the 155 individuals interviewed, 70.3% (n = 109) were female and 29.7% (n = 46) male. Similar results were reported by Amorim (2019) in research on the perception of hygiene and food safety of handlers from the Southeast and Northeast of Brazil, where approximately 70% of participants were female, regardless of the researched state. This highest incidence of female respondents in comparison to males in research on food handling might be related to the fact that women tend to engage in food handling activities, as they are traditionally responsible for their preparation in a home environment (ABUD, 2021).

Regarding the degree of education, it was possible to observe a greater prevalence of individuals with completed middle education (42.6%) (n = 66) compared to other levels of education.

In the research conducted by Pagotto et al. (2018) on the knowledge, attitudes, and practices of food handlers from Vitória, ES, the authors reported that 52% of respondents had

completed middle school, a similar percentage to the value found in our study.

There is a linear relationship between the educational level of food handlers and the adoption of Good Practices, i.e., a low level of knowledge culminates in bad attitudes, because when handlers fail on personal, food, or environmental hygiene, it increases the risk of contamination, which may favor the development of pathogenic microorganisms and, consequently, compromise the consumer's health (DEVIDES et al., 2014).

Regarding family income, 47.7% (n = 74) of respondents declared monthly income up to 1 minimum wage (R$ 1,045), 25.2% (n = 39) declared monthly income up to 2 minimum wages (R$ 2,080), 8.4% (n = 13) 2 to 4 minimum wages (R$ 2,090 to R$ 4,180), 2.6% (n = 4) 4 to 10 minimum wages (R$ 4,180 to R$ 10,450), 3.2% (n = 5) from 10 to 20 minimum wages (R$ 10,450 to R$ 20,900) and 12.9% of respondents (n = 20) preferred not to respond.

Different results were demonstrated in the study of Ferrari and Fonseca (2019) on the knowledge of consumers of Espírito Santo regarding FBD, where 37.0% of interviewed declared monthly income between 3 and 4 minimum wages. The inequalities of incomes observed in both studies may be related, but not limited, to the public policies that shape them, with different dynamics and standards in the regions of Brazil, involving different configurations and characteristics of social welfare (CAVALCANTE, 2020), especially when comparing other geographical areas, such as Southeast and Northeast, where it is possible to find the highest incomes in the South and Southeast and lowest income in the North and Northeast regions (AMORIM, 2019).

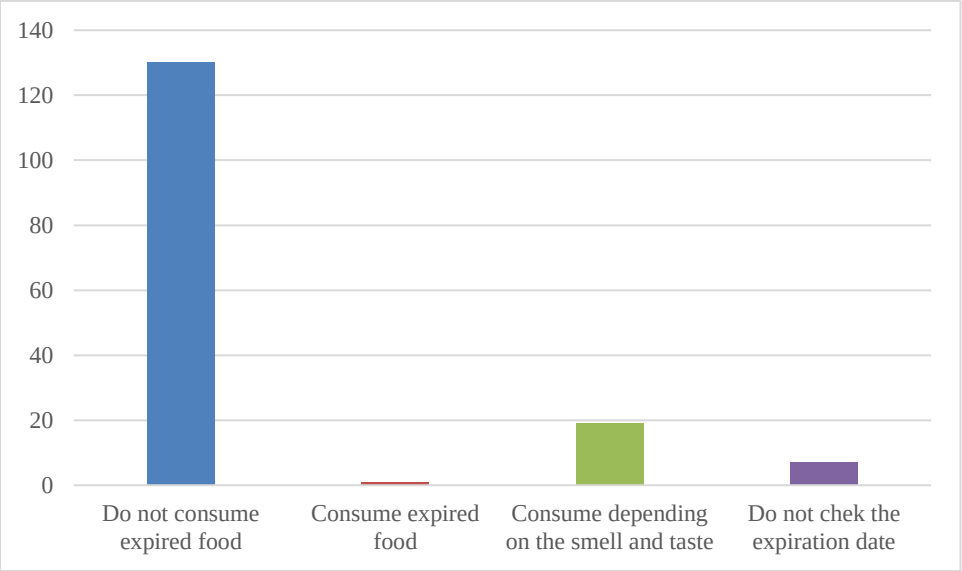
From the data collected, it was observed that approximately 86% (n = 134) of the interviewed people answered that they had the habit of preparing or consuming food at home.

In the study of Amorim (2019), the author reported similar values to that found in our research, where about 90% of respondents attested to preparing food at home. The results reinforce the official data of the Ministry of Health (MS), which reports that, in Brazil, between 2010 and 2018, the distribution of BFD outbreaks occurred mainly at residences, with 37.2% of cases registered (BRASIL, 2018).

In this context, it is of great importance to improve hygienic-sanitary control actions in food from the home environment to reduce risks of FBD's in these environments (PAGOTTO et al., 2018).

Regarding the consumption of foods after the expiration date, most consumers (83.9%; n = 130) have stated they do not consume expired food, whereas 4.5% (n = 7) of the interviewees have said they do not check the expiration date on the food packaging. (Figure 1).

Figure 1 – Absolute frequency of verifying expiration date on the food packaging in Nossa Senhora da Glória, SE.



Source: Elaborated by the authors.

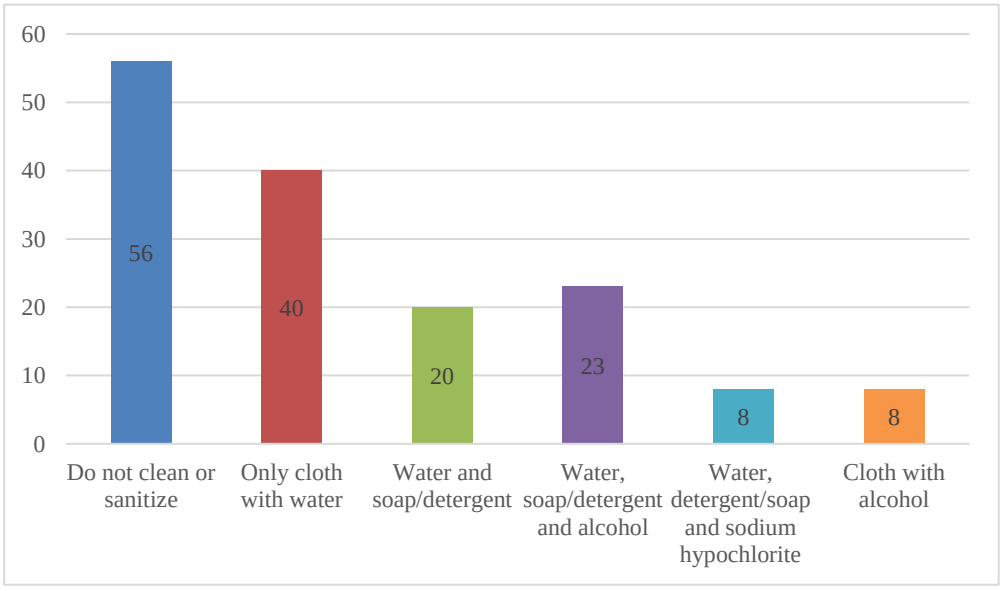
They reported similar results in the study of Faria and Bonnas (2018), where the authors registered that approximately 71% of respondents attested that expiration date is one of consumers' most critical food safety aspects.

In another study conducted in the States of São Paulo and Rio de Janeiro by Andrade et al. (2013), the authors observed that the most outstanding consumer concern, regardless of the surveyed state, was related to the expiration date of the food. Still, in the same study, it was highlighted that 65% of respondents observed if the product had any altered color, smell, and consistency characteristics.

The shelf life is an essential tool that establishes the time by which the product can be safely consumed without causing any harm to the consumer's health (BRESSAN and TOLEDO, 2020). It is not always that changes in sensory characteristics of food are the most accurate way to evaluate safety for consumption, making the expiration date a critical tool to ensure food intake with no potential risks to any consumer.

Regarding surface sanitation of food packaging after purchase, 36.1% (n = 56) of the interviewees answered that they did not clean or sanitized the packaging. On the other hand, 25.8% (n = 40) of respondents reported using only cloth with water, 12.9% (n = 20) claimed to use water and soap/detergent, 14.8% (n = 23) described to use water, soap/detergent and alcohol 70%, 5.2% (n = 8) revealed to sanitize the packaging of foodstuffs with detergent/soap, water and sodium hypochlorite and 5.2% (n = 8) of the interviewees said they used cloth with 70% alcohol (Figure 2).

Figure 2 – Absolute frequency of food consumers/handlers performing sanitation process on packaging food in Nossa Senhora da Glória, SE.



Source: Elaborated by the authors.

The probability of contamination and microbial growth in materials used for food packaging is mainly due to the absence of Good Hygiene Practices, which may favor the migration of contaminating microorganisms from the packaging to the food. (SILVA et al., 2015).

The study conducted by Duboc (2013) on the evaluation of the chemical and microbiological quality of food packaging, had found that from 120 samples analyzed, 52.8% presented mesophile aerobic bacteria counts higher than 30 CFU/cm², recommended maximum value for the American Public Health Association (APHA).

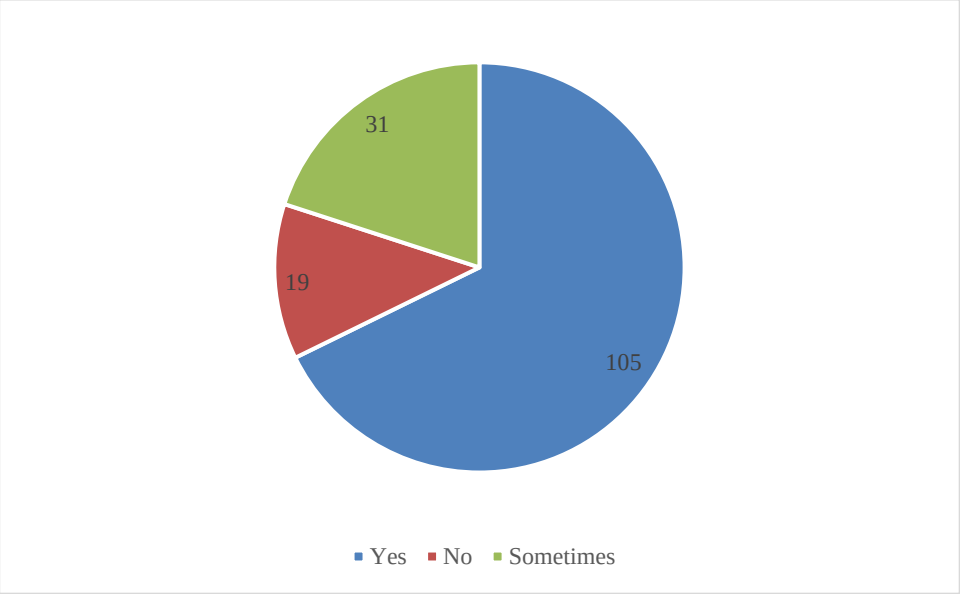
Hygienic-sanitary conditions of the exposed environments influence contamination of packaging. It may vary according to the exposure time (DUBOC, 2013), so the sanitation of

food packaging is an important step that should not be neglected, especially in the domestic environment.

Food packaging sanitizing in the domestic environment can be performed, for example, with sodium hypochlorite solution for glasses, cans, and rigid plastics packaging. For flexible packaging, sanitizing can be achieved with 70% alcohol and paper towels. This is an essential step for removing or inactivating microorganisms present on food packaging surfaces that might be related to FBDs and even inactivating other agents not associated with FBD but interesting from the public health point of view. One is Sars-CoV-2, the virus that causes Covid-19 (KAMPF et al., 2020).

Regarding fruits and vegetables, it was possible to testify that 68% (n = 105) of consumers claimed to clean these food matrices before storing them in the fridge. In comparison, 20% (n = 31) of the interviewees answered to do it sometimes, although 12% (n = 19) reported that they did not perform any hygiene steps at all (Figure 3).

Figure 3 - Frequency of sanitation of fruits and vegetables before being stored in the fridge by consumers in Nossa Senhora da Glória.



Source: Elaborated by the authors.

The environments where vegetables are exposed, such as supermarkets, fairs, and horticulture, are areas that can have a large circulation of people who come into contact with food and surfaces. Thus, the cleaning of vegetables after purchase and before storing them in an appropriate place in a domestic environment is an essential tool to minimize possible risks

to consumers' health.

Among the 67.7% (n = 105) of respondents who performed periodically or eventually the hygiene of vegetables and fruits, 40% (n = 62) claimed to use only water. In comparison, 35.5% (n = 55) mentioned using water and bleach for fruits and vegetables. Another 22 people (14.2%) reported using soap/detergent and water, while 6.5% (n = 10) of respondents said they used water, soap/detergent, and bleach.

Santos et al. (2012) have warned that mainly fresh vegetables, especially leafy vegetables, are a potential source of pathogenic microorganisms, contributing to the increase in FBD cases.

To avoid FBD, it is imperative to implement Good Manipulation Practices in the domestic environment. One of the keys to this procedure is the sanitation of fruits, regular vegetables, and leafy vegetables (SANTOS et al., 2021).

For adequate sanitation, the vegetable must be firstly rinsed, which is the most common practice performed in households. Effectiveness in rinsing operation should be complemented by using sanitizing solutions, aiming for the reduction and elimination of microorganisms present in those foods, and mandatory procedures for foods that will be consumed raw (CHAVES et al., 2016).

Of the interviewees using bleach to sanitize fruits and vegetables, only 31.6% (n = 49) reported having the habit of checking the product label, while most respondents, 63.9 % (n = 99), said not having the habit of reading the bleach label and verifying if it could be used for food sanitation.

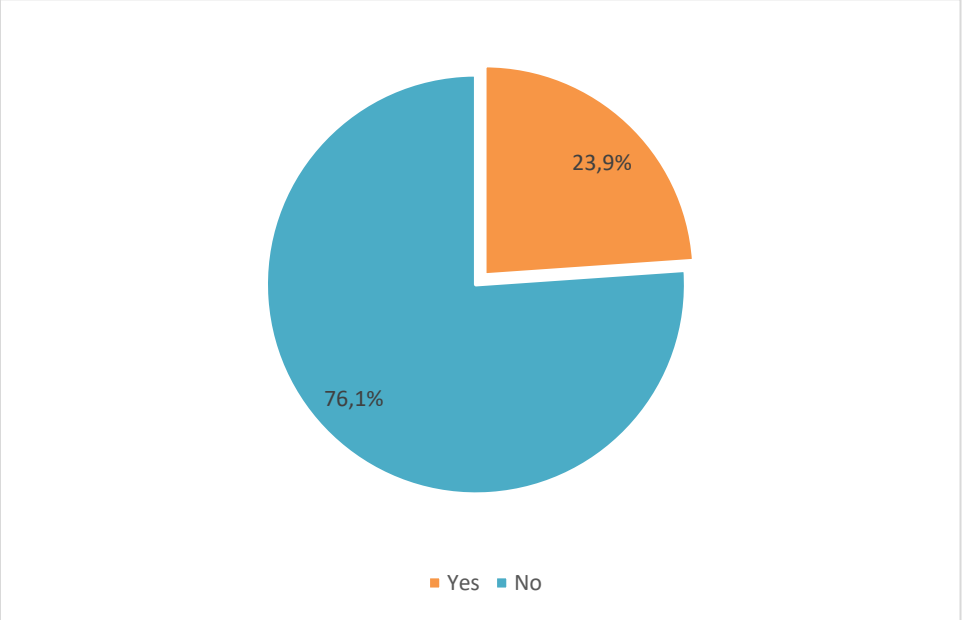
It is recommended that consumers better check the label of sanitizers used for the hygiene of fruits and vegetables once there is such critical information on it about measures to be taken, adequate dilution, application mode, and storage conditions (SILVA, 2016).

It is essential to highlight that the correct dilution of the sanitizing solution to be used is paramount for effective bactericidal or bacteriostatic action of chlorinated inorganic compounds, such as bleach, since it generally has a pH close to 11.5, being, under this pH value, inefficient against pathogenic microorganisms (SANTOS et al., 2020).

For this reason, it is essential to perform the dilution of this compound properly, so there is the formation of hypochlorous acid (HClO), which is the active compound responsible for the inactivation of contaminating microorganisms that may be present in a given food matrix (SANTOS et al., 2020).

Regarding the habit of consumers rinsing the eggs, it was possible to verify that 23.9% (n = 37) of the interviewees have answered that they do it often, and 76.1% (n = 118) stated they do not do it at the home environment before storing them (Figure 4)

Figure 4 – Relative frequency of consumers in Nossa Senhora da Glória that has the habit of rinsing the eggs before storing them.



Source: Elaborated by the authors.

Similar results were reported in Fortunato, and Vicenzi (2014) at consumers' residencies in Caxias do Sul, the Rio Grande do Sul, where the authors registered that 77.5% of interviewed consumers attested not to rinsing the eggs before storing them.

The correct guidance, as per the GMP of food, is that the rinsing of the eggs must be performed only when the dust is apparent once this procedure might generate harm to the microscopic pellicle present at the egg shell surface, allowing the entry of harmful bacteria, such as Salmonella (FORTUNATO; VICENZI 2014).

Records of contamination in different levels in fresh eggs by Salmonella spp. are pretty often (CAMPELLO, 2012; SÁ et al., 2015; CHEMALY et al., 2009; COSTA et a., 2016).

Costa et al. (2016) reported that egg contamination often occurs through the shell, as the moisture, time, and storage temperature are essential factors responsible for bacterial migration. Therefore, fresh egg rinsing should be avoided.

Among the interviewed consumers, 56.2% (n = 87) answered that they stored the

leftovers of warm food on the refrigerator shelves. In comparison, 29.7% (n = 46) answered they leave them at room temperature, on the stove or the table, for example. On the other hand, 11% of consumers (n = 17) reported storing warm food leftovers in the freezer, while 1.9% (n = 3) claimed to keep them on the stove until cooling down and then in the fridge. Only 0.6 % (n = 1) of the interviewees reported discarding the leftovers.

In a study by Motta et al. (2014), the authors showed that about 38% of participants answered that they left the leftovers on the stove or the countertop. The authors warn that such practice results in an increased risk of microbial growth, causing damage to consumers' health that ingests it. Among the factors that enable the proliferation of microorganisms, the cause most mentioned during FBD outbreaks was the prolonged time of food exposure at room temperature (AMORIM, 2019).

In this context, the idea is to store the leftovers under refrigeration in the shortest possible time interval, especially in cities with high temperatures, such as Nossa Senhora da Glória. The higher the temperature, the higher the speed of microbial multiplication and, consequently, the higher risk of FBD.

By analyzing hand sanitation, it was found that 76.1% (n = 118) of the interviewees had washed their hands before saving their purchases upon the supermarket arrival. In addition, 75.5% (n = 117) answered they have washed their hands before manipulating or consuming the food, while 80.6% (n = 125) reported sanitizing them with soap/detergent and water.

Similar results were found by Souza et al. (2011), where the authors observed that 92% of respondents had presented the habit of sanitizing their hands right before consuming food, and 66% answered that they had used soap and water to wash their hands.

According to Oliveira et al. (2015), hand hygiene in running water, the use of neutral detergents, and 70% alcohol reduce the presence of most microorganisms in the hands of food handlers.

Ponath et al. (2016), when assessing the sanitization of the hands of food manipulators in five establishments in Ji-Paraná, Rondônia, found that all samples collected from the handler's hands presented an out-of-standard level recommended for counting *Staphylococcus aureus*.

S. aureus constantly inhabits the nasopharynx of the human being and can easily contaminate the hands of individuals and then food. This fact becomes a risk to consumers' health since this bacteria has a high degree of pathogenicity because they produce a

staphylococcal enterotoxin, which is responsible for causing outbreaks of intoxication by FBD. (JESUS et al., 2018).

When asked about the use of 70% alcohol on hands before and after attending food seller's establishments, it was possible to verify that 85.2% (n = 132) of respondents answered they had used alcohol as a sanitizer. In comparison, 12.9% (n = 20) claimed to use 70% alcohol only in certain occasions.

Alcohol is among the safest antiseptics due to its low toxicity, immediate microbicide effect, and ease of application (OLIVEIRA et al., 2015).

According to RDC ANVISA Number 216/2004 (BRAZIL, 2004), hands' sanitization is intended to reduce the microorganisms present on the skin by hand washing, followed by 70% alcohol usage or other antiseptic agents. In addition, the handlers' hands should be cleaned before and after attending the establishments, before and after the handling of food, after the use of toilets, when touching contaminated materials, and whenever necessary (OLIVEIRA et al., 2015).

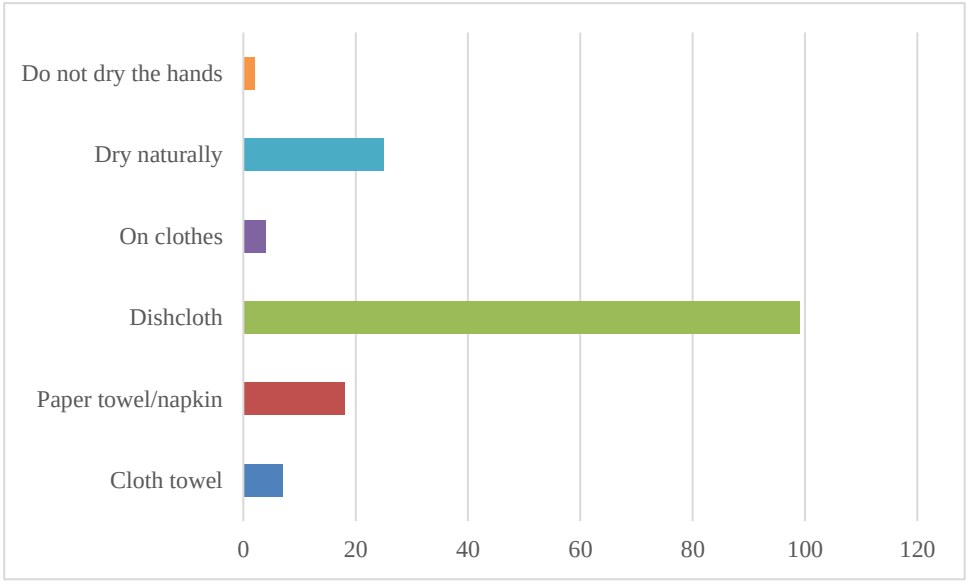
Importantly different studies have demonstrated the efficiency of 70% alcohol for hands' sanitization (ROSADO e SILVA 2016; WIRZBICKI et al., 2012; QUEIROZ et al., 2010).

According to the study by Oliveira et al. (2015), the use of 70% alcohol in handlers' hands in a fruit processing agribusiness was able to inactivate the total coliform count to 0 MPN/mL, by the technique of the most probable number. The authors stated that, due to adequate sanitization, the sanitized hands did not have any possible risk of contamination.

Thus, the correct hygiene of hands in the domestic environment, right before manipulating food, is a crucial tool for minimizing possible microbiological contamination from hands to food.

Regarding the drying of the hands after sanitation, approximately 63.9% (n = 99) of the interviewees claimed to dry their hands on a cotton cloth (dishcloth) (Figure 5).

Figure 5 – Absolute frequency of profile of drying hands at home environment after the cleaning executed by manipulators in Nossa Senhora da Glória.



Source: Elaborated by the authors.

Fortunato described similar data, and Vicenzi (2014) in a survey conducted in Caxias do Sul, RS residences. The authors reported that 71.3% of manipulators dry their hands on the dishcloth. With this result, it is possible to attest that few manipulators are aware of the correct form of drying their hands, which would be the use of paper towels or napkins since the microbiological count on dishcloths (fabric) are often high and can quickly disseminate pathogenic microorganisms to other surfaces, utensils and even to other foods (MARTINS et al., 2020).

In this context, according to the results obtained, it was possible to attest that the lack of research and investments in Brazil with the standardized methodology that investigates food manipulation practices in the domestic environment is still an obstacle to the planning of public health actions aimed the sanitary education of the population.

In addition, the relationship between hygiene practices described and analyzed by consumers of Nossa Senhora da Glória has shown that knowledge about hygienic-sanitary conditions in food manipulation in the domestic environment showed a high frequency of nonconformities, demonstrating that the planning of educational actions for society regarding Good Practices of Food Handling at home environment can represent an important strategy to minimize the high percentage of FBD-related outbreaks in such environment, thus enabling the transportation, preparation, consumption, and storage of different food matrices, way more

conscious and safe when performed by well-oriented food handlers.

CONCLUSION

The knowledge about hygienic-sanitary practices in food handling in the domestic environment is insufficient by most interviewees, especially regarding the hygiene of the surfaces of food packaging, transportation of refrigerated foods from market establishments to home and the drying methods for the hands. Facing this scenario, it is recommended that projects and educational actions be developed, focusing on the consumer and home environment, so that the necessary information might be disseminated throughout the society to provide significant changes in consumers' habits and thus ensure that food consumption at domestic environment will be safely performed.

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