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Profile of establishments in the supermarket sector with respect to Good Practices in the city of Santa Maria (RS), Brazil

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Abstract

The objective of this study was to verify the compliance of the supermarket sector with respect to the Good Practice Program standards of the city of Santa Maria (RS), Brazil. Sixty nine establishments were verified using a checklist of good practices for the supermarket sector in Santa Maria, RS (Brazil), from April to July 2011. The data were collected by a food safety and quality professional using this checklist. The results showed that the overall adequacy of the establishments surveyed was 29.07%. The highest percentage of compliance was found for storage at ambient temperature (64.13%). The lowest compliance percentage was also found in different sections and areas in the supermarkets such as bakery and confectionery (14.93%), water supply (18.30%), food handling (21.01%), sausage and cold meat (or deli meat) (36.38%), and documentation-related items (4.97%). None of the supermarkets evaluated had the necessary documentation for the implementation of good practices. The results of this study show the importance of effectively implementing a good practice program and quality systems by raising awareness among technicians and professionals of the importance of quality programs used in food companies and the need for more thorough inspection delivered by competent authorities to ensure food safety for consumers.

Keywords: good handling practices; food safety; supermarkets.

1 Introduction

The supermarket sector in Brazil has grown over the last two decades as companies have been following global trends such as providing a wide variety of retail formats that cater to the different characteristics and needs of the market. This trend has increased the need to seek quality and to differentiate stores by supermarket sector as consumers are increasingly more demanding (BRASIL, 2011).

Emphasis on food safety has increased since the 1990s and has been instrumental in the implementation of measures that regulate the receipt of raw materials, the marketing of food, and the training of professionals involved in food manipulation (BRASIL, 2011).

Legislation, including the Brazilian Administrative Rule numbers 1.428/1993, RDC 275/2002, and RDC 216/2004, and the Rio Grande do Sul Administrative Rule number 78/2009 have been focused on this issue. Eighteen guidelines for good manufacturing practices (GMP) have been approved and an HACCP system (Hazard Analysis and Critical Control Points) has been implemented in the area of production and food handling (BRASIL, 1993; 2002; 2004; RIO GRANDE DO SUL, 2009).

Regardless of legislation, government, businesses and consumer awareness about the importance of good practices during food handling are essential to assure food safety. According to the ABRAS (Brazilian Supermarket Association) journal, food safety cannot be addressed as a product

differentiator, but mainly as a responsibility of the supermarket sector (SOUZA, 2001).

The lack of data in the supermarket sector in relation to food quality in Brazil, often prevents the carrying out of more detailed studies in the area of food safety. However, and the importance and interest in this subject have increased thus requiring more research and investment in this area (BRASIL, 2011).

Therefore, the present study examines the conceptual changes in the supermarket sector of importance and the quality of food offered. The objective of this study was to verify the adequacy of the supermarket sector with respect to the Good Practice Program of the city of Santa Maria (RS), Brazil.

2 Materials and methods

Trata-se de uma pesquisa de campo observacional, descritiva, qualitativa, and quantitative approaches with the purpose of gaining greater knowledge about the general nature of the problem. A study was conducted and monitored by health surveillance in 2010 in 69 supermarket establishments in the city of Santa Maria (RS, Brazil), after signing an informed consent for the conduction of this research. The establishments that do not meet the selection criteria and whose manager or food handler was unwilling to answer the questions were excluded from the study. Only 3 establishments were excluded.

The data were collected from April to July 2011 using a checklist of good practices containing questions based on

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current legislation of the Ministry of Health and the Ministry of Agriculture, Livestock and Supply (BRASIL, 1993, 1997, 2002, 2004; RIO GRANDE DO SUL, 2009). The following supermarket sections and areas are considered in the checklist: sausage and deli meat, bakery and confectionery, food handling, food handlers' changing rooms and restrooms, water supply control, integrated pest management, and documentation pertaining to good practices.

The supermarket establishments were classified into three groups according to the group score obtained: Group 1 (Good), establishments that comply with more than 75% of the items in the list; Group 2 (Regular), establishments that provide 51% to 75% satisfactory service; Group 3 (deficient), establishments that comply with 50% or less of the items in the list (BRASIL, 2002).

The data were evaluated using the Statistical Analysis System version 9.02 and Statistica 6.0 version software programs.

This study was conducted in accordance with the ethical standards in Resolution No. 196/96 (BRASIL, 1996) with the approval of the Research Ethics Committee under number 0030.0.243.000-11.

3 Results and discussion

3.1 General classification of supermarket establishments

The general classification of establishments, according to regulation RDC 275/2002 of the National Sanitary Surveillance Agency (Anvisa), regarding the compliance to the good practice requirements is in Figure 1 (BRASIL, 2002).

Only 5.80% (n=4) of the establishments studied satisfied 51-75% of the requirements and were classified as Group 2 (Regular). However, the majority of the establishments surveyed (94.20%) were classified as Group 3 (Deficient) and are in compliance with less than 50% of the items in the good practice checklist, which highlights the susceptibility of these establishments to food contamination.

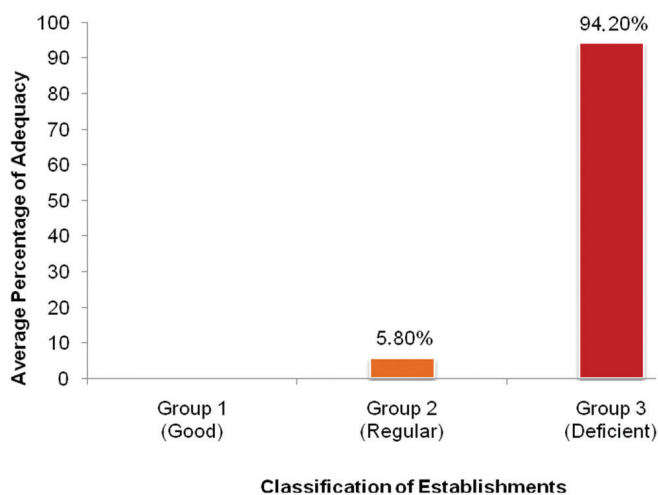


Figure 1. General Classification of supermarkets in Santa Maria, Rio Grande do Sul, Brazil according to the good practice checklist, 2011.

Similar data were found by Valente and Passos (2004) using inspection certificates in 46 supermarkets in southeastern Brazil. They found that 79.3% of those establishments were considered deficient (Group 3), 19.0% fell into Group 2 category, and only 1.7% fell into Group 1 category. Similar results were reported for commercial restaurants; 33% of the establishments were classified as Group 2 (30 to 69% compliance) and 67% as Group 3 (up to 30% compliance) (AKUTSU et al., 2005). Rodrigues and Salay (2012) and Saccol et al. (2009) show a low level of compliance to good practice standards in Brazilian food services.

The percentage of overall compliance to the standards of the checklist was 29.07% in the 69 establishments evaluated, which is considered a low rate of compliance based on the recommendations of the Brazilian Health Surveillance agency, which is at least 76% (BRASIL, 2002).

3.2 Evaluation of the sausage and deli meat section

The compliance with the standards of good practice for the sausage and deli meat section was 36.38%, which is considered to be quite unsatisfactory compared to the index established by Brazilian legislation (BRASIL, 2002). When assessing food storage in this section, compliance was 67.75%. However, items related to temperature of the freezers and refrigerators obtained scores below 51%, which is considered deficient based on the standards of good practices.

The compliance percentages for food handling in this were fairly low (12.38%). Proper handling of foods aims to control the presence of pathogens by controlling their contamination, growth, and survival to obtain a safe product for consumers, which is one of the items necessary for the adoption of good practices.

It was found that, only 2.90% of the establishments have separate sinks for hand hygiene in the area of deli meat slicing and odorless liquid soap and antiseptic products and recycled paper towels and automatic touchless paper towel dispenser. According to Brazilian legislation, a washbasin used exclusively for hand hygiene must exist in all areas of food handling, and it must be located in a strategic position relative to the flow of food preparation with adequate hygiene products (RIO GRANDE DO SUL, 2009).

With regard to the use of metal brushes, sponges, and disposable cleaning cloths, all areas surveyed in the deli meat processing plants were nonconformant. Oliveira et al. (2007) analyzed cloths and sponges from a sample of households in Rio de Janeiro, Brazil, and identified a high and diverse contamination level based on the microbiological parameters allowed.

With regard to the handling of perishable products, only 31.88% of the establishments in compliance with the standards currently recommended by state legislation (RIO GRANDE DO SUL, 2009). In other establishments, the foodstuffs were exposed to ambient temperature for more than 30 minutes, which may compromise the hygienic quality of the food prepared.

As for the display of food products, the data showed 64.06% compliance based on the good practice standards, indicating that the freezers in 69.57% of the establishments evaluated showed proper hygiene, conservation, and operation. The equipment used had protective barriers to reduce food contamination due to the consumer proximity, in 66.67% of the establishments.

3.3 Assessment of the bakery and confectionery section

The compliance of the bakery and confectionery section was 14.93%, making it the section with the lowest compliance percentage based on the good practice standards. Back, Oliveira and Colares (2007) studied bakeries in Rio de Janeiro, Brazil, 46% of compliance with the good practices, which is considered to be Group 3 (deficient).

The compliance of food storage in this section was 32.30%. All items in this section exhibited compliance below 51%, which is considered unsatisfactory based on the standards of good practices. As for the perishable foods in this section, it was found that only 24.64% of the establishments stored foods according to the recommendations of Brazilian legislation, and only 26.09% of the establishments stored food in a clean and organized manner, away from the floor, and walls and separated the food by category.

It was found that the compliance percentage for the food-handling in this section was only 13.04%. The adoption of appropriate sanitation measures in food handling aims to control hazards and should be stimulated to ensure food safety (BRASIL, 2004).

3.4 Assessment of food handlers

The compliance of food handlers in this section was low, only 21.01%, which is considered unsatisfactory based on the requirements of current legislation (BRASIL, 2002, 2004; RIO GRANDE DO SUL, 2009). With regard to the health status of food handlers in this section, no skin lesions, respiratory infections, or gastrointestinal symptoms were observed. However, among the food handlers who presented any of these symptoms, only 8.70% stayed away from work, thus compromising the sanitary-hygienic quality of the food.

It is very important that the food handler does not have wounds, injuries, or cuts on their hands and forearms, have chronic or acute gastro-enteritis or lung infections or pharyngitis. Food handlers displaying these symptoms should not handle any food (ABREU; SPINELLI; ZANARDI, 2003; BRASIL, 2004; SACCOL et al., 2006).

Only 1.45% of the food handlers had the training required for personal hygiene, food handling, and foodborne diseases; however, the establishments evaluated lacked evidence of such training.

Currently, there are laws governing the occupation and training of food handlers in Brazil (BRASIL, 1997; 2002; 2004; RIO GRANDE DO SUL, 2009). Some studies report that food hygiene training is a legal requirement for food producing establishments and should be part of an effective strategy for the food safety management (GÖES et al., 2001; BRICIO; LEITE;

VIANA, 2005; SEAMAN; EVES, 2006; CARRIJO et al., 2010). Ansari-Lari, Sodbakhsh and Lakzadeh (2010) and Nunes et al. (2010) emphasize that improvements can be achieved if the training is associated with periodic monitoring by a qualified technician to identify the need for further training.

It was observed that only 10.14% of the food handlers were wearing appropriate uniforms, and only 17.39% removed their personal adornments (long nails, nail polish) and did not have good personal hygiene practices Lippi et al. (2004) found that the majority of food handlers in the city of Rio de Janeiro, Brazil, wear ornaments and jewelry during food preparation, neglecting the food safety. These findings are in agreement with the results found in the present study.

Furthermore, only 7.25% of the food handlers properly clean their hands before handling foods, when changing activities, or after using the toilet. Similar results were reported in a study conducted by Xavier et al. (2008) in bakeries in Quixeré (Ceará, state of Brazil). These authors found that all of the employees who handled foods wore personal ornaments and did not wash their hands before working, after handling food, or after using the toilet.

In a study by Walker, Pritchard and Forsythe (2003), it was found that food handlers had good personal hygiene practices such as not wearing jewelry and other adornments during food handling. However, a lack of continuous training has been identified as a factor that could hinder the adoption of these measures.

3.5 Assessment of changing rooms and toilets

The compliance of toilets and changing room facilities used by food handlers in this section was 9.06%, which is quite low based on the standards of good practices.

Of the 69 establishments surveyed, only 11.59% (n=8) had sanitary facilities for food handlers separate from those for customers and others. In other establishments, food handlers and professionals of other areas used the same facilities offered to customers, which violates the current law (BRASIL, 2004). Moraes et al. (2005) found similar results when assessing the sanitary-hygienic conditions in supermarkets in shopping malls in Rio de Janeiro, Brazil.

3.6 Assessment of water supply control

The results indicate that the compliance of these establishments regarding the control of water supply was 18.30%. However, when the conditions of the water reservoirs were evaluated, only 24.64% were free of cracks, leaks, infiltration, and loose flakes. Professional cleaning of the water reservoir by a specialized company was performed in 10.14% of the establishments in time intervals not exceeding six months, but only 4.35% of the establishments evaluated kept records of this procedure.

Soto et al. (2006) evaluated four supermarkets and found that one of the main irregularities was the cleaning of water reservoirs, which agrees with the findings of the present study. Fernandez et al. (2003) found that in the city of Rio de Janeiro,

Brazil, three of 53 outbreaks analyzed were related to water contamination, indicating that the supply of water of good quality is essential.

It is important to mention that RDC 216/2004 recommends four Standard Operating Procedures; only one refers to water reservoir hygiene and includes specification of the type of surface to be cleaned, the cleaning method, the active ingredient selected, and the concentration and contact time of physical and/or chemical agents used in the operation. These pieces of information must be clear even when the cleaning operation is performed by an outsourced company and must be included in the form of certificate of execution of service (BRASIL, 2004).

3.7 Evaluation of integrated pest management

The compliance of the establishments in terms of integrated pest management was 28.16%. In general, 49.28% of the establishments were free of urban pests and vectors; however, only 20.29% and 5.80% of the establishments evaluated have insect-proof screens in the windows, doors, and doorways, respectively.

Limited use of preventive measures for the control of animals, insects, and rodents such as physical barriers were observed. However, only 28.99% of the establishments evaluated hired a specialized company registered with the Brazilian Health Surveillance agency. According to the reports of those responsible for the establishments, there is frequent application of insecticides and pesticides, which increases the risk of chemical contamination or workplace related accidents due to the high toxicity of these compounds and their demand for special care.

According to the current legislation, the integrated control of urban pests is defined as a system incorporating preventive and corrective actions to prevent the attraction, shelter, access to and/or the proliferation of urban pests and vectors that compromise the quality of sanitary-hygienic food (BRASIL, 2004; MALINVERNO; FRANCISCO; ROZA, 2009; RIO GRANDE DO SUL, 2009).

Often, the presence of pests is related to a lack of preventive and corrective maintenance in the facility, the absence of a maintenance program, and a lack of training and deficient physical planning.

3.8 Evaluation of documentation pertaining to good practices

The results obtained show that the compliance in this section was 4.97%, and documentation was one of the items with the lowest compliance percentage based on the good practice checklist. With regard to items such as the presence of a professional technician, the existence of a handbook of good practices and Standard Operating Procedures, records of professional training, and quality of drinking water from alternative sources 100% of non-compliance was observed.

It is known that the implementation of the handbook of good practices and Standard Operating Procedures should be

periodically monitored, and then corrective measures should be adopted. Corrective actions should include product destination, the restoration of hygiene conditions, and re-evaluation of the Standard Operating Procedures (BRASIL, 2002, 2004; MALINVERNO; FRANCISCO; ROZA, 2009).

Yamamoto et al. (2004) found no evidence of the handbook of good practices in most of the establishments they surveyed. These authors stressed that when the handbook was present, it was kept by the owner or manager, which prevented access by other employees. Abreu, Spinelli and Zanardi (2003), Medeiros et al. (2012) and Rodrigues; Silva; Aleixo (2012) reported similar results when evaluating good practices in food services.

According to Brazilian legislation, a good practice handbook should be available in this type of establishments. Without the adoption of good practices, low quality food will be provided posing risks to consumers.

In accordance with the present study, Panza et al. (2006) stressed the importance of having a food safety professional working in the food industry. They also argued that good practices can only be adopted by the food industry when demanded by this professional. Bolton et al. (2008) found that 78% of the people responsible for food safety in establishments are not aware of good practice, demonstrating a lack of knowledge and training in the area.

In addition to documents, standards, and control spreadsheets, good practices should be effectively used and implemented routinely in food sector operations (VEIROS et al., 2009). However, it should be noted that the absence of documentation and records was a common practice in the supermarket establishments studied, reflecting serious noncompliance with the current Brazilian legislation.

4 Conclusions

After using the good practices checklist, it was found that the supermarket establishments surveyed showed an overall compliance of 29.07%, and food storage and storage temperature showed the highest compliance percentage. The establishments were less satisfactory in other section, mainly bakery and confectionery, water supply, food handling, sausage and deli meats section, and of good practice documentation.

Therefore, the presence of technicians and food safety professionals and a thorough inspection delivered by competent authorities are recommended for an effective applicability of good practices and quality systems as a way to provide consumers with the constitutional right to have access to safe food. The present research contributes to the conduction of further studies in these establishments and to greater involvement of the whole society in the issues addressed.

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