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THE IMPACT OF VETERINARY INSPECTION ON REDUCING OUTBREAKS OF CONTAMINATED FOODBORNE DISEASES

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ABSTRACT

Objective: To evaluate the impact of veterinary inspection in reducing outbreaks of diseases transmitted by contaminated food, analyzing the effectiveness of sanitary inspections, microbiological control and the implementation of food safety protocols. Diseases transmitted by contaminated food represent a major challenge to global public health, and are often associated with contaminated animal products. Veterinary inspection plays an essential role in preventing these diseases through the regulation and monitoring of food production, transportation, and marketing. This study used a literature review of articles published between 2002 and 2022 to analyze the

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relationship between sanitary supervision and the occurrence of outbreaks. The findings suggest that the implementation of rigorous inspection measures and the implementation of state-of-the-art monitoring technologies have considerably decreased the incidence of diseases transmitted by contaminated food. However, obstacles such as the decentralization of supervision, the lack of qualified professionals and the demand for greater integration between regulatory entities are still present. It is essential to update inspection techniques and strengthen traceability policies to ensure food safety and reduce public health hazards.

Keywords: Microbiological contamination. Sanitary control. Public policies. Food traceability. Epidemiological surveillance.

INTRODUCTION

Diseases transmitted by contaminated food represent a significant challenge to global public health, causing high rates of morbidity and mortality. The World Health Organization estimates that, annually, one in ten people in the world contracts diseases due to the consumption of contaminated food. The bacteria *Salmonella spp*., *Escherichia coli,* and *Listeria monocytogenes* are the main causes of these outbreaks (World Health Organization, 2020).

In Brazil, diseases transmitted by contaminated food are a problem of great health and economic impact, with thousands of cases reported annually. Veterinary inspection is one of the main tools to ensure the safety of food from animals, preventing the spread of pathogens and reducing the dangers to the health of the population. The intervention of regulatory entities, such as the Ministry of Agriculture, Livestock and Supply (MAPA) and the National Health Surveillance Agency (ANVISA), is crucial for compliance with health regulations and for reducing outbreaks linked to contaminated food (Ferreira, 2017).

Veterinary inspection is regulated by laws such as Law No. 1,283/1950 and Normative Instruction No. 70/2003, which define standards for sanitary inspection, microbiological monitoring, and quality assurance of products of animal origin. The application of strict procedures in the verification of meat, eggs, dairy products and fish has been pointed out as an efficient tactic to reduce outbreaks of diseases transmitted by contaminated food and promote food security in the country (Brasil, 1950; Brazil, 2003).

Research suggests that effective health inspection can considerably reduce outbreaks of these diseases. According to Braz (2022), the implementation of preventive actions, such as the control of *Salmonella spp*. and *Campylobacter spp*. in slaughterhouses, led to a significant decrease in the incidence of infections linked to the consumption of animal products. However, there are still challenges, such as the decentralization of supervision, the lack of qualified professionals, and the lack of appropriate infrastructure for inspections at all stages of the production chain (Ferreira, 2017).

In addition, with globalization and the increase in international food trade, sanitary inspection has become more complex, requiring constant monitoring and improvement of tracking systems. In view of this, it is essential to detect outbreaks early

and for health authorities to intervene promptly to stop the spread of pathogens and prevent damage to public health (Alencar, 2002).

In this context, the objective of this study is to examine the effect of veterinary inspection on the reduction of outbreaks of diseases transmitted by contaminated food, based on epidemiological data and review of the scientific literature. The debate will discuss the progress made in sanitary control, the obstacles that still exist and the possibilities to improve supervision and food safety in Brazil.

METHODOLOGY

This study is based on a literature review and documentary analysis of available epidemiological data on foodborne diseases and veterinary inspection in Brazil. Scientific databases, including SciELO, PubMed, LILACS, and institutional repositories, were consulted for up-to-date information on outbreaks of foodborne diseases and veterinary inspection.

The research included dissertations, scientific articles and technical documents issued by regulatory agencies, such as the Ministry of Agriculture, Livestock and Supply (Mapa) and the National Health Surveillance Agency (Anvisa). In addition, pertinent legislation was analyzed, such as Law No. 1,283/1950 and Normative Instruction No. 70/2003.

The selection criteria included research published between 2002 and 2022, which discusses the connection between sanitary supervision and the reduction of outbreaks of diseases transmitted by contaminated food, taking into account factors such as the number of documented outbreaks, the main causative agents, and the effectiveness of control actions. Articles with outdated information, duplicate reviews, and reviews without a defined methodology or without a direct connection to the subject of veterinary inspection were eliminated.

RESULTS AND DISCUSSIONS

Veterinary inspection directly contributes to the reduction of outbreaks of diseases transmitted by contaminated food, as evidenced by several studies. The Program for the Reduction of Pathogens, Microbiological Monitoring and Control of *Salmonella spp*. in chicken and turkey carcasses, established by Normative Instruction No. 70, of 2003, is an example of effective action. Since its implementation, there has

been a decrease in outbreaks of *Salmonella spp*., which highlights the relevance of sanitary supervision in the control of these diseases (Ferreira, 2017).

The adoption of the Hazard Analysis and Critical Control Points (HACCP) system is another crucial element for the effectiveness of veterinary inspection, as it makes it possible to detect and eliminate hazards before they reach the consumer. This model has been extensively used in slaughterhouses and dairy industries, considerably reducing the presence of harmful microorganisms in the final products (Braz, 2022).

In addition, the improvement of inspection procedures through the use of technologies such as biosensors, agile tests, and artificial intelligence has improved the identification of contamination. These innovations allowed a faster reaction of inspection agencies and collaborated to improve food safety (Alencar, 2002).

The intensification of health education programs aimed at producers, food handlers and consumers has also proven to be a crucial tactic to reduce outbreaks of diseases transmitted by contaminated food. Awareness of good hygiene practices and safe food handling can minimize the risks of contamination along the production chain (Silva *et al*., 2021).

However, even with progress, there are considerable challenges to the effectiveness of enforcement measures. Research shows that the absence of a unified epidemiological and health monitoring system reduces the ability to detect and manage outbreaks of acute tropical diseases. In addition, the epidemiological analysis of outbreaks is still restricted, affecting the ability of regulatory agencies to react. Outbreaks are often not properly reported or analyzed, which complicates the development of effective public policies for their prevention (Braz, 2022).

Brazilian legislation has evolved to strengthen enforcement actions. Law No. 1,283/1950 and its regulations establish the obligation to carry out a sanitary inspection of products of animal origin before commercialization. However, the decentralization of inspection to states and municipalities, often with inadequate infrastructure, undermines the effectiveness of the measures. In addition, the scarcity of veterinary inspectors and the overload of work are elements that hinder the effectiveness of the control system (Alencar, 2002).

To overcome these difficulties, it is essential to expand the training of professionals in the inspection area, ensuring that they are up to date on new techniques and regulations. The adoption of digital tracking mechanisms to monitor food

production in real time is also a promising tactic to increase transparency and food safety (Ferreira, 2017).

Therefore, the intensification of veterinary inspection requires joint initiatives between the public and private sectors, as well as constant investments in technology and infrastructure. Only through a unified and efficient strategy will we be able to considerably reduce the outbreaks of diseases transmitted by contaminated food in Brazil and ensure safer food for the population.

FINAL CONSIDERATIONS

Veterinary inspection is essential in the prevention and control of foodborne diseases, ensuring the quality and safety of products of animal origin. The intensification of inspection measures, together with technological progress and the training of professionals, has shown a positive effect in reducing outbreaks of diseases transmitted by contaminated food in Brazil. However, there are still challenges, such as the decentralization of supervision, the shortage of qualified auditors, and the demand for a more unified system of health and epidemiological surveillance. To ensure the effectiveness of the measures, it is crucial to invest in updating inspection techniques, strengthening health education and improving the legislation in force.

Only with an integrated approach between government, the productive sector and society will it be possible to consolidate a robust and efficient inspection system, reducing risks to public health and ensuring safer food for the population.

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