FOOD DEFENSE CAPABILITY IN THE BRAZILIAN ARMED FORCES: A SYSTEMATIC APPROACH

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ABSTRACT

This paper discusses the food defense system and subsystems, highlighting elements of logistics, human and animal health safety[1], behavior and strategic intelligence; this results from a retrospective and descriptive search of the occurrence of food outbreaks and catastrophes in different contexts, with a reduction of military capability and combat power. By discussing the perception of risk with regard to the vulnerability of military food and water reserves and the reflexes in the state of readiness of the deployed military force, this text seeks to insert food defense in discussions related to national defense, which are intrinsically related to the operability of a troop. Food defense is a cross-cutting theme that intersects with different security and strategic sectors of interest to Brazilian sovereignty. The contamination of water and food supplies can lead to a shortage and collapse of their supply; in this way, it can be used to deter and destabilize a military force, representing a threat to national defense. The design of the present study was mostly qualitative, exploratory-descriptive and analytical in character. The research technique used was a bibliographic review and document analysis.

Keywords: Brazilian Armed Forces. Food defense. Food safety. Military capability. Systems. Water and foodborne diseases.

1 Health security refers to areas in which national security and public health interest overlap.

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CAPACIDADE EM DEFESA ALIMENTAR NAS FORÇAS ARMADAS BRASILEIRAS – ABORDAGEM SISTÊMICA

RESUMO
O presente trabalho discute o sistema de Defesa Alimentar e subsistemas, pontuando elementos da logística, da segurança em saúde humana e animal, do comportamento e da inteligência estratégica resultado de busca retrospectiva e descritiva sobre a ocorrência de surtos e catástrofes alimentares em diferentes contextos, com reflexos na redução da capacidade militar e do poder de combate. Ao abordar questões sobre a percepção do risco com relação à vulnerabilidade das reservas militares de água e alimentos e os reflexos no estado de prontidão da força militar desdobrada, este texto busca projetar a inserção do presente tema em discussões afetas à defesa nacional intrinsicamente relacionada à operacionalidade da tropa. Trata-se de tema transversal que dialoga com diferentes setores securitários e estratégicos de interesse da soberania brasileira. A contaminação das reservas de água e alimentos pode levar ao desabastecimento e colapso de sua oferta e desta maneira, utilizada como meio de dissuasão e desestabilização de uma força militar representando ameaça à defesa nacional. O desenho do presente estudo é majoritariamente qualitativo, exploratório-descritivo e de caráter analítico. A técnica de pesquisa utilizada foi revisão bibliográfica e análise de documentos.
Palavras-chave: Capacidade militar. Defesa alimentar. Doenças de transmissão hídrica e alimentar. Forças Armadas Brasileiras. Segurança alimentar. Sistemas.

CAPACIDAD EN DEFENSA ALIMENTAR EN LAS FUERZAS ARMADAS BRASILEÑAS – ENFOQUE SISTÉMICO

RESUMEN
El presente trabajo discute el Sistema de Defensa Alimentar y subsistemas, puntuando elementos de la logística, de la seguridad en salud humana y animal, del comportamiento y de la inteligencia estratégica resultado de búsqueda retrospectiva y descriptiva sobre la ocurrencia de brotes y catástrofes alimentarias en diferentes contextos con reflejos en la reducción de la capacidad militar y en el poder del combate. Al abordar cuestiones sobre la percepción del riezgo con relación a la vulneralibilidad de las reservas militares de agua y productos alimenticios y los reflejos en el estado de prontitud de la fuerza militar desplegada, este texto tiene el objetivo de proyectar la insersión del presente tema en discusiones relacionadas a la defensa nacional intrínsecamente relacionada al funcionamiento de la tropa. Se trata de un tema transversal que dialoga con diferentes sectores relacionados a la seguridad y estrategia de interés de la soberanía brasileña. La contaminación de las reservas de agua y alimento puede llevar al desabastecimiento y colapso de su oferta e de esta manera, utilizada como medio de disuasión y desestabilización de una fuerza militar y representando amenaza a la defensa nacional. El dibujo del presente estudio es mayoritariamente cualitativo, exploratorio descriptivo y de

carácter analítico. La técnica de investigación utilizada fue el repaso bibliográfico y análisis de los documentos. Este artículo hace parte del trabajo de tesis de doctorado de la autora en el curso de Posgrado en Ciencias Animales en la Universidad de Brasilia, en progreso.
Palabras-clave: Defensa alimentar. Seguridad alimentar. Enfermidad de transmisión hídrica y alimentar. Fuerzas Armadas Brasileñas. Sistemas. Capacidad militar.

1 INTRODUCTION

"Disentery ... has been more fatal
to armies than powder and shot"
(OSLER, 1892)

Food outbreaks resulting from the ingestion of contaminated food are capable of destabilizing a military reaction force and producing many casualties; the provision of safe food is a guarantee of operational employment, directly reflecting the time of the engagement of the military in combat and the morale of the troops. Historically, water and food constitute excellent substrates for the transmission and dispersion of contaminating microorganisms. Syndromes resulting from the ingestion of contaminated food or water are known as foodborne diseases. Throughout the world, reports of foodborne disease outbreaks by biological agents identify a new epidemiological panorama characterized by rapid propogation speed, high pathogenicity and a cosmopolitan character (FRANCO, 2012).

In this sense, the present paper discusses the growing demand and interest in food defense, as a contribution to the guarantee of national defense in an interdependent way. Francisco Menezes, President of the Food and Nutrition Security Council (CONSEA; 2004 to 2007), declared that food and nutritional security, and the policies that underpin it, would not be sustainable over time if it were no country's sovereignty to guarantee it.

A recurring theme on the agenda of international agencies is food defense and the impacts of a targeted attack on food and service chains; this is discussed in committees and expert forums within the United Nations (UN), World Health Organization (WHO), World Organization for Animal Health (OIE), Food and Agricultural Organization (FAO), World Trade Organization (WTO) and Centers for Disease Control and Prevention (CDC).

Mcdowell (2017), from the Florida Institute of Technology, studied the complexity of the food industry and the interdependence of its components with direct and indirect effects on human and animal health. He discussed: the growing trafficking of undeclared products and organisms of presumed health risk; aspects related to the cultural influence of different people, religious customs and restrictions (the 'kosher' market, Muslim and Hindu) on the massive food fraud business that, according to the Global Food Safety Initiative (GFSI)[2], invoices US$ 30-40 billion annually; the increasing number of recalls that in 2015 forced more than 120 companies to remove contaminated products from different circulation brands; the commercial and economic barriers of agribusiness and in the political field, the practice of governmental intervention in the competitive international market. These were all determining factors in the management of food crises.

The present work is the result of the Agreement of Technical Cooperation[3] signed between the University of Brasília (UnB) and the Ministry of Defense (MD), with a view to the execution of research and actions on health, food defense and biosafety. It aimed to contribute to the structure of the Food Defense System of the Brazilian Armed Forces as support for the operationality of troops.

2 FOOD DEFENSE

The main objective of food defense[4] is to protect consumers from the intentional contamination of food by biological, chemical, physical or radiological agents. In a related way, food safety establishes standards and procedures for guaranteeing food safety at each stage of the production chain (procurement, storage, processing, fractionation, packaging and distribution), known as "field-to-table". Accidental contamination can occur along the production chain, due to deviations or failures of the production mode, with food of animal origin being the most vulnerable and that prepared for collective consumption (WORLD HEALTH ORGANIZATION, 2001). The conceptual difference between food defense and food safety is whether the contamination is premeditated (food defense) or not premeditated (food safety).

2 Global Food Safety Initiative – GFSI: Global Food Safety Initiative is a private organization created and managed by the International Trade Association, Consumer Goods Forum.

3 Process number 60310.000334/2016-87. ISSN DOU 1677-7069 Nº 223. Nº 223, 22/11/2016.

4 Food Defense is the protection of food and beverage and its supply chains from any forms of malicious attack, including ideologically motivated attacks that may lead to contamination or supply failure. PAS 96:2010.

The OIE has warned of the risk of animal products and derivatives of infectious agents and toxins found in the animal population that pose a threat to public health, food safety and the agricultural and livestock economy. About 80% of pathogens with the potential to be used as biological weapons are zoonotic, i.e., they are interchangeable between the human and animal population; out of every five emergent human diseases that appear per year, three would have originated from animal reserves[5].

Sobel (2002) described the viability of a bioterrorist attack on US food reserves by addressing the existing national strategy for preparedness and response from the perspective of the CDC. Microorganisms can be used as biological weapons in terrorist actions, due to their high impact, ease of acquisition and dispersion in the environment. This can produce a mass panic and social disorder event, in a diffuse way, with sporadic and seemingly unnoticed cases or even manifest as an epidemic, at a relatively low cost. It draws attention to the centralized American production mode and is supported by a large transport and distribution logistics network, which favors the rapid dissemination of a contaminated lot throughout the national territory.

Another approach inherent to the vulnerability of the food chain and modes of production was addressed by Yannas (2014) in the Behavior Based Food Safety Management System. This combines scientific knowledge with elements of human behavior and organizational culture in relation to the adoption of good food manufacturing practices and the development of risk perception by the manipulator. It anticipates interdisciplinarity through the integration of biological and social sciences, incorporating "systemic thinking" (a system is an entity that maintains its existence through the interaction of its parts), one of the assumptions of the General Theory of Systems by Bertalanfy (1977).

In the private sector, contamination in food production plants is not uncommon, so food industries and regulatory agencies have become advanced in terms of the development of prevention and control mechanisms and the requirement of quality certifications to obtain safe food. One of the most widespread and adopted systems is Hazard Analysis and Critical Control Point (HACCP), which is capable of preventing accidental risks to food safety, predicting what may go wrong (hazard) from the knowledge of the product and the process and when and how (critical points of control) it might go wrong, in a systematized and documented way, and establishing a strategy to prevent foodborne diseases in a globalized context (ORGANIZACIÓN MUNDIAL DE LA SALUD, 2001). However, this same system

5 Biological threat reduction: OIE. http://www.oie.int/en/our-scientific-expertise/biological-threat-reduction/ Accessed April 11, 2019.

is unable to predict cases of intentional or deliberate food contamination, usually involving an insider with free access to production and different motivations (e.g., unsatisfied employee, sabotage, attempted extortion). The Guidance for the Protection of the Food Chain and Beverages from Deliberate Attacks recommends the application of Threat Assessment and Critical Control Points (TACCP), a tool for the prevention and mitigation of threats to the food chain through the exhaustive evaluation and identification of vulnerabilities, and of all those who have access to the production process, constituting the company's food defense plan (THE BRITISH STANDARDS INSTITUTION, 2014).

In Brazil, the Ministry of Defense through the Armed Forces Food Safety Regulation - MD 42-R 01 has established the essential requirements of Good Practices and Operational Procedures for Food Services in Military Organizations, in order to prevent the occurrence of the contamination of food prepared and regularly distributed by military kitchens (BRASIL, 2017b). Finally, in the midst of this multifaceted scenario, the present work discusses the Brazilian military food defense capacity in a systemic way, understood as the guarantee of the innocuousness of the military supplies of water and food against intentional contaminations, and the structure to deal with situations of armed conflict without the need for further modifications.

3 FOODBORNE DISEASES IN MILITARY CAMPAIGNS

Cook (1999), in a retrospective study of the influence of diarrheal diseases on military and naval campaigns, described the great terror caused by dysentery, plague and typhus during the Crusades (XI-XIII); these were responsible for producing more deaths than injuries on the battlefields. In the sixteenth century, diarrhea was generally attributed to a sudden change in diet. By the end of the seventeenth century, there was a growing consensus that the success of military campaigns was determined by disease prevention, health care, and the welfare of the combatant. In 1752, Sir John Pringle, a Scottish man considered to be the "father of military medicine", gathered the first sanitary recommendations for hygiene in camps and military marches in the "Observations on the Difeafes of the Army in Camp Garrison"; he instituted basic and efficient measures, such as covering latrines with land, changing the place of the camp after the occurrence of outbreaks, and carrying out the drainage of the lands, among other strategies, known as "Pringles principles". At the height of the Napoleonic Campaign (1803–1815), death by disease was generally eight times greater than that caused during the confrontation itself; thousands of Frenchmen perished in Russia and Egypt due to diarrheal diseases caused by

multiple agents. This rate would fall almost 50 years later, during the American Civil War (1861–1865), with the adoption of sanitary measures in military camps. Still, during this conflict, the military casualties by binomial diarrhea/dysentery would account for about 360,000 cases, producing 21,000 deaths by the end of the conflict. In addition to the acute form, chronic diarrhea (typhoid fever) would add 149,000 new cases and 35,000 deaths on both sides of this same war.

Cook (1999) went on to describe the numerous English-American losses caused by amebiasis, a common type of parasitic intestinal infection during World War II. In Vietnam (1955–1975), the number of US military casualties by foodborne diseases was higher than malaria cases. During the first 6 weeks of occupation in South Korea (Korean War, 1950–1953), US forces registered 78,970 occurrences of foodborne diseases, reaching an average of 54 cases in each group of 98 soldiers. The military campaign promoted by the French Expeditionary Force in Indo China (1946–1954) suffered numerous casualties, accounting for about 160,000 cases of amoebic colitis, associated with shiguelis, salmonellosis and cholera. More recently, during the Gulf War (1990–1991) and Saudi Arabia, the rate of hospitalizations of US soldiers resulting from intestinal infections averaged 5 to 10% in each group of 1,000 Americans per week (COOK, 1999).

Michel et al. (2014), in an article by the Center for Epidemiology and Public Health of the French Armed Forces, observed the high health risk of French troops operating in epidemic or endemic areas for infectious diseases in tropical countries. They mentioned that in 2013, the employment of French soldiers on missions in Africa, Central and South America and Asia was higher than the 40,000 individuals in the military. In this context, this group was confronted with prevalent cases of fecal-oral transmission diarrhea, caused by multiple agents and other water-borne and percutaneous transmission diseases, such as leptospirosis and schistosomiasis; the latter disease was responsible for the infection of 10 military personnel in charge of rebuilding a bridge in Côte d'Ivoire.

Huerta et al. (2000) reported an outbreak of diarrhea involving civilians and military personnel in The Golan Heights, Judea, in 1998; this involved 175 soldiers and 54 civilians, and was due to the contamination of the water supplied by the region, with inadequate chlorination and a high concentration of enterotoxigenic *E. coli*. Boni (2016), a veterinary medical officer, observed that safeguarding water and food tanks is often neglected, making them vulnerable to acts of terrorist groups.

Cases of acute gastroenteritis caused by Norovirus (NV) are recurrent in military groups. Grotto et al. (2004) reported an outbreak involving 159 individuals at the Israeli Military Base in 1999. After conducting an

epidemiological investigation, a lack of proper food handling practices was observed, which was suggestive of cross-contamination. The previous year, a similar explosive outbreak occurred at Fort Blis in El Paso, Texas, where 100 military personnel fell ill after eating (ARNESS et al., 2000).

In the Army of Portugal, gastroenteritis involving multiple enteropathogenic viral agents, Norovirus GI (GI.3), Norovirus GII (GII 4 New Orleans), Rotavirus, Adenovirus, Astrovirus and Sapovirus, associated or not, were described after a retrospective investigation by Lopes-João (2013). A survey carried out in the period from 2006 to 2012 related the implicated food and the most common failures involved in the preparation of meals. The Laboratory of Bromatology and Biological Defense (LDBD) of the Portuguese Army monitors the quality of the food services of their military units through active and passive epidemiological surveillance, constituting food safety teams. During the performance of a military training activity, Lopes-João et al. (2015) recorded an outbreak of gastroenteritis, caused by the consumption of water.

Several opportunistic microorganisms have been cited in gastrointestinal outbreaks in military hospitals. In 1999, the Czech 6th Field Hospital medical unit, which provided assistance to Kosovo refugees, presented an atypical case; the infectious agent involved was *Providencia alcalifaciens*, a bacterium incriminated in hospital infections involving the respiratory and urinary tract, and found in untreated water, waste and soil. The diarrheal outbreak produced a total of 27 hospitalizations of the medical unit staff and was suspected to contaminate one of the meals served during a fraternization luncheon (CHLIBEK et al., 2013).

In 2003, the British troops that invaded Iraq were faced with very precarious sanitation conditions for several weeks. In this scenario, a Campaign Hospital was deployed, which provided support to almost half of the troop, who had complaints of gastroenteritis. Epidemiological investigations demonstrated the presence of Calicivirus, which was later aggravated by dehydration and personal fatigue (BAILLEY et al., 2005).

Bechtol et al. (2011) reported a case of an American soldier diagnosed with brucellosis after returning from campaigning in Iraq. The main complaints, marked muscle pain accompanied by weakness and mild symptoms of infection, were similar to those of an autoimmune disease, which made the final conclusive diagnosis of the disease difficult; it was explained by the anamnesis of the consumption of local foodstuffs.

4 GENERAL SITUATION

Following the attack on the Twin Towers on September 11, 2001, the United States increased traffic control and trade measures to create the Public Health Security and Bioterrorism Preparedness and Response Act,

or simply the Bioterrorism Law of December 12, 2003; this directly interferes with the import and export dynamics of agricultural and food products. Among other measures, the Food and Drug Administration (FDA) has demanded prior notification of all consignments of food imported by the United States, a practice adopted by the Customs and Border Protection Offices (CBP), demonstrating a growing concern about events that could affect national agricultural biosafety and international trade in food commodities. The US Congress has considered agroterrorism a strand of bioterrorism, defined as the deliberate introduction of an animal or plant capable of affecting livestock or the food supply, generating fear and instability and causing great economic losses [6].

More recently, following the same line of action, the US Congress through Public Law 115-43, 115th Congress, on June 30, 2017, intensified coordination efforts between the food, agriculture, and veterinary defense sectors against terrorism (Coordination of Food, Agriculture, and Veterinary Defense Against Terrorism) and the consequences to national security, aiming to provide supervision and integration of the activities of the departments related to veterinary public health, food defense and agricultural security [7].

The CDC has listed the major biological agents of water and food supply with employment potential in a bioterrorist attack: *Clostridium botulinum* and botulinum toxin; *Bacillus anthracis*, viable in the form of aerosols; *Salmonella* spp., which is easily obtained and has a high environmental resistance; *Shigella* spp., with low infective doses; *Escherichia coli* O 157: H7 causing complications of hemolytic uremic syndrome (HUS); and *Vibrio cholerae* O1, capable of producing large-scale outbreaks. Almost all of these listed microorganisms are handled in clinical and research laboratories, which identifies the need to ensure the bioprotection and biosafety measures of facilities of this nature. The fear is so great that in the United States, the investigation of suspected cases of bioterrorism impacting the traditional food chain involved with food reserves is conducted by the FDA, in joint action with the Federal Bureau of Investigation (FBI). In this sense, there are several reports of the occurrence of the intentional contaminations of foods in the United States. In 1984, a faith-based religious sect deliberately contaminated salad buffets with *Salmonella typhimurium* in a restaurant chain in the state of Oregon,

6 Available at: https://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatory Information/ucm153055.htm Accessed April 11, 2019.

7 Available at: https://www.congress.gov/115/plaws/publ43/PLAW-115publ43.pdf Accessed April 11, 2019.

causing 751 cases of gastrointestinal infection. In 1996, a laboratory technician from an American university used a strain of *Shigella dysenteriae* to deliberately contaminate co-workers. Such cases may go unnoticed and appear incidental, until an epidemiological investigation identifies an unusual pattern of contamination, in which the speed of the identification and the withdrawal of the product from circulation is vital (SOBEL et al., 2002).

Another CDC publication reported that about 9.4 million Americans per year were victims of diarrheal syndromes, 5.5 million of whom were viral, 3.6 million of which were of a bacterial nature and 200,000 that were parasitic. Thirty-one pathogens were identified in order of virulence, including Norovirus (gastrointestinal viruses), followed by *Salmonella* spp., *Clostridium perfringens* and *Campylobacter* spp. Recently, emerging microorganisms have become increasingly epidemiologically important in gastrointestinal outbreaks and infections, such as *Listeria monocytogenes* (listeriosis) and *Toxoplasma gondii* (toxoplasmosis), which are responsible for high rates of hospitalization and mortality each year (SCALLAN et al., 2011).

In 2008, the US Department of Defense (DoD) developed the Technical Guide for Vulnerability Assessment of Water and Food Reserves (Technical Guide 188: U.S. Army Food and Water Vulnerability Assessment Guide). This protocol established measures to control the infrastructures of the water supply system and the contamination of the raw and treated water reserves, as well as identified the vulnerabilities of the food supply facilities, as part of the defense anti-terror program. In the US Army, the veterinary service is tasked with advising on food safety actions to assess the safety vulnerabilities of the involved facilities, processes and persons, and access to the reservoirs and water or food facilities of a military organization (ESTADOS UNIDOS, 2008).

In 2011, a European outbreak caused by *E. coli* O 104 from the consumption of raw food demonstrated the American military's preparedness and response capacity. Until the agent was identified, in this case an emerging microorganism capable of producing a highly aggressive toxin, the contaminated food, sprouts produced on a farm in Germany, was withdrawn from circulation. About 4,100 people became ill and more than 900 patients developed HUS, totaling 50 deaths. The epicenter of the crisis occurred in the city of Hamburg, Germany, from May to July of that year. The outbreak mobilized several authorities and public health experts in Europe. During this period, the US Army's Public Health Command Region - Europe coordinated a multidisciplinary team that carried out the monitoring, prevention and risk communication of exposure to the American community operating in the territory (military and health agents); there were no records of hospitalizations (DODD; COOPER, 2012).

5 INTRODUCTION OF PATHOGENS THROUGH FRONTIERS

The Code of Ethics for International Trade in Food aims to protect human health and prevent fraud and the misappropriation of member countries, including those responsible for consumer health and regulation; it thus ensures confidence in the activity of the competitive international food market. The WTO's Sanitary and Phytosanitary Agreement (SPS) aims to maintain the right of countries to adopt plant health standards, regulations and technical measures that they deem appropriate for the protection of human, animal and plant health, while at the same time ensuring that such measures are not imposed arbitrarily, which would result in unnecessary barriers to trade and is accepted by the Codex Alimentarius[8] as a guarantee of food safety (ORGANIZACIÓN MUNDIAL DE LA SALUD, 2001).

In this regard, Brazil has an extensive border area and 10 neighboring countries with different health statuses, which can exchange infectious agents and diseases that do not exist in the national territory. In 2011 and part of 2012, by means of a retrospective study of the observation of international land border traffic in three agricultural surveillance units (Uvagros/MAPA) located in the north of the country in Pacaraima (state of Roraima), Assis Brasil and Epitaciolandia (state of Acre), Eidt et al (2015) observed the circulation of dairy products, fish, meat and sausage products, bee products and veterinary products from Peru and Bolivia and the clandestine transit of commercial birds from Venezuela.

The size of the economic impact of a health catastrophe can be assessed from the last two episodes of foot-and-mouth disease (FMD) in the United Kingdom in 2001 and 2007. In the case of the confirmation of outbreak, a veterinary state of emergency in the area shall be declared and any animals or products susceptible to the disease shall be banned from leaving the area, as well as any other products or materials likely to be transmitting the viral agent, including restrictions on the transit of vehicles and of unauthorized persons and establishing a policy of animal sacrifice. The first of the outbreaks was responsible for the slaughter of about 6 million cattle at a cost of US $6.9 billion; it took 18 months for the complete normalization of existing trade agreements. In 2007, a new outbreak of FMD, localized and of a shorter duration, resulted in the sacrifice of 2,160 million animals at a cost of US $200 million, until its complete eradication[9].

8 Codex Alimentarius (from the Latin Law or Food Code) is a collection of internationally adopted food standards that are presented in a uniform manner, which includes advisory provisions in the form of codes of practice, guidelines and other recommended measures.

9 Available at: https://www.oda.state.ok.us/ais/atwhatcost.pdf Accessed April 11, 2019.

In 1978 in Brazil, African swine fever occurred for the first time, causing severe economic losses. In total, there were 24 notifications in the state of Rio de Janeiro, costing US $13 million, the sacrifice of 66,902 animals, and the unemployment of more than 2,000 families directly or indirectly involved in the pig farming business. The African swine fever virus was introduced through contaminated cathering leftovers arriving from Portugal and Spain at Galeão Airport in Rio de Janeiro, which were reused in animal feed by a breeder of pigs in the city of Paracambi (RJ) (MOURA et al., 2010).

In the field of science, the University of Brasília (UnB) worked together with the Ministry of Agriculture, Livestock and Food Supply (MAPA) to carry out investigative research aimed at monitoring the illegal transit of animal products or inputs with potential contamination, and the introduction of pathogenic or exotic agents across borders via ports, airports and the dry frontier. This provided the government with information for the prevention of sanitary catastrophes.

In this context, recent publications have described the clandestine transit of food of an animal origin through Brazilian airports, without international sanitary certification. In a coordinated effort with agricultural and customs authorities, de Melo et al. (2014a) confirmed the presence of contaminating microorganisms with zoonotic potential, such as *Brucella* spp., *Mycobacterium bovis* and *Mycobacterium avium* sub sp. paratuberculosis by molecular tests carried out at the National Agricultural Laboratory (LANAGRO-MG/MAPA); these were found in dairy products located in a passenger's baggage in transit at Guarulhos International Airport (SP) and Galeão Airport (RJ).

In another publication, with the aid of a scanner and on research missions for a period of about one year, analyzed seizures accounted for 657.40 kg of meat and by-products, dairy products, honey, eggs and exotic products present in two Brazilian airports (GRU and GIG), outlining for the first time the profile of the most favorable passenger that would carry undeclared animal products in their luggage (DE MELO et al., 2014b).

In the same line of research, Jansen et al. (2019) presented indicators of food contamination for zoonotic pathogens, together with increasing bacterial resistance, that represent a potential threat to human and animal public health when they are transmitted by products of animal origin that are illegally imported into the European Union. These products are vectors of emerging foodborne diseases that are viable due to cross-contamination and hygienic-sanitary failures during handling and processing, favoring the occurrence of large-scale, cross-border outbreaks that represent severe socioeconomic impacts; these are often disseminated through traditional trade routes and migratory movements.

6 FINAL CONSIDERATIONS

Feeding the military imposes logistics that require complex and agile support that is capable of sustaining the duration of the action in adverse and restrictive conditions, when deployed. Their preparation becomes one of the most important factors for the health, well-being and maintenance of the morale of the troop. In such cases, particular attention should be paid to proper food handling practices, the protection of water supplies and food depots, and the disposal of leftovers, waste and food residues, while preserving environmental, health and hygiene conditions in the action zone (BRASIL, 2017a).

Since 2005, the Ministry of Defense of Brazil has institutionalized food safety, following the worldwide trend of providing food services with quality management requirements and the promotion of good manufacturing practices through the Armed Forces Food Safety Regulation - MD 42-R -01 (BRASIL, 2017b).

Coelho (2016), from the Brazilian Intelligence Agency (ABIN), suggested the association of elements of the security culture and state intelligence in supporting health security and the transmilitarization of chemical, biological, radiological and nuclear defense (CBRN events); Coelho (2016) also identifed recommendations for the intersectoral optimization of state action in the area of prevention, preparedness and response to public health emergencies caused by CBRN events.

In the late 1980s, the US Department of Defense launched the concept of military capabilities[10] as a new form of defense planning capable of dealing with the unforeseen and attending to a diverse set of risk scenarios (RODRIGUES, 2013). Sustainability is the military capability responsible for maintaining the level of readiness during operational activity, and was perfectly identified as the objective of this study. Furcolin et al. (2013) corroborated the importance of operational capability-based planning between defense and public security for the prevention of terrorist acts, the maintenance of critical infrastructure security and the implementation of civil defense measures.

In addition, it is important to mention the National Defense Strategy, which established among its guidelines the “strategic potential for capacity building” (BRASIL, 2017a).

At the end of this discussion, we sought to correlate the guarantee of water supply and safe food as a critical element to sustain the operationality of a troop, and consequently, military efficiency.

10 Military Capability is the ability to achieve a particular war objective, and includes: strength structure, technological modernity, operational readiness and sustainability. Source: https://www.thefreedictionary.com/military+capability Accessed April 11, 2019.

It is essential to emphasize the cross-cutting nature of the issues addressed in this study, dialoguing with several sectors of health security and national defense, in which are urged to plan, provide solutions and mediate conflicts, with a view towards the prevention, intersectoriality and interoperability of the Armed Forces. The food system is dynamic and multifaceted, depending on factors dictated by the logistic and operational context. In a food crisis, the risk is real, the consequences are dramatic and reaction ability and time are determinant.

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Recebido em: 10 nov. 2018
Aprovado em: 20 maio 2019