

Quantitative panorama of a decade of cases of food intoxication in north of brazil

SILVA, Pâmela do Espírito Santo ^[1], FECURY, Amanda Alves ^[2], OLIVEIRA, Euzébio ^[3], DENDASCK, Carla Viana ^[4] DIAS, Claudio Alberto Gellis de Mattos ^[5]

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Diseases transmitted by food (DTFs) can be defined as those caused by external agents that enter the living being, by water or contaminated food. Food and water can be contaminated by toxins both in industrial processing and during human handling. The aim of this study was to compare data from fourteen years of food intoxication in the northern region of Brazil with the national data. The research was conducted in the database of FIOCRUZ Sinitox Sistem, between 2000 and 2013. Human food intoxication occurs in greater quantity in the urban area and the age group with the highest number of cases was between 20 and 29 years, and 30 and 39 years. In the northern region to the country the number of collective cases was higher than the individual cases, with the majority of cases of human intoxication occurring with the female gender. Perhaps if there was a higher rate of basic sanitation in the country and if there was a greater stimulus to teaching good practices to producers and ready-to-eat food handlers, a positive change in this scenario could be observed.

Keywords: Food intoxication, Epidemiology, Basic sanitation.

INTRODUCTION

Foodborne diseases (DTAs) can be defined as those caused by external agents that penetrate the living being via water or contaminated food. Contamination can be by chemical or biological agents. Usually most cases occur with the entry of disease-causing microorganisms (pathogens) in the body (Epifânio et al., 2015).

Transmission of diseases through food can occur in three ways: food poisoning, which involves the uptake of microbiological toxins left by bacteria and other pathogens in food; the food infection, which results from the ingestion of the pathogen together with the food; and food toxoinfection, where the individual ingests the microorganism and its toxin at the same time (Silva et al., 2013, Mossel, Moreno and Stuijk, 2006).

Food and water can be contaminated by toxins both in industrial processing and during human handling. Contamination toxins can be produced by living things (such as bacteria, viruses and protozoa) or are chemical agents. Viral particles contained in faeces can cause poisoning when ingested. Fecal-oral transmission occurs if there is a lack of personal hygiene or wrong food handling. Food poisoning by bacteria occurs when these microorganisms deposit their toxins in food. Ingestion of these toxins, if harmful, can cause diseases to the host via food. Protozoa, like bacteria, can produce substances that are toxic to humans. Wrong processing of the food may cause it to contain these toxins and ingestion causes intoxication (Barreto and Silva, 2006).

Intoxication through chemical agents can occur through food that has toxins, such as manioc (*Manihot esculenta*) that has a high cyanide rate in the leaves. If the latter is ingested in its natural state, it can lead to severe and lethal intoxication (Trombini and Leonel, 2014). The wrong rinse to remove detergents used in cleaning equipment that process food may be causing contamination of this food, causing intoxication (Wolf, 2017). Riverside populations that have high consumption of fish meat are at risk of food poisoning by heavy metals. Metals such as mercury, which may be present in fish because of environmental pollution, can cause neurological disturbances in humans (Junior et al., 2017).

Farmers and people who have direct contact with pesticides may be poisoned. These occurrences are divided into three categories: acute intoxication, which occurs when the individual is exposed to these products for a short time; subacute or over-intoxication, which consists in exposing the person to stronger agents over a short period of time; and chronic intoxication, which is the individual's long exposure to the particular type of pesticide. In acute intoxication headaches, nausea, vomiting, breathing difficulties, weakness, abdominal cramps, tremors, confusion and seizures may occur. Subacute or over-intoxication can lead to headaches, weakness, discomfort, stomach pain, and drowsiness. Chronic intoxication can cause the individual to present weight loss, muscle weakness, depression, irritability, insomnia, anemia, dermatitis, hormonal changes, immune problems, infertility, congenital malformations, abortions, liver and kidney diseases, and respiratory diseases (Silva, 2017).

Intoxications by food additives intentionally added to foods by industry occur when the individual who consumed certain product is intolerant of the amount of additives added. As an example, we can cite the tartrazine dye used to give lemon yellow color to candies and caramels. If consumed at high rates it can provoke allergic reactions in some people (Barbosa, 2016).

There are several ways in which a food can be prevented from being contaminated by micro-organisms and thus has the possibility of contaminating the consumer. The most important prevention measures are to clean hands before and after food consumption; purchase natural foods only from a reliable source; cook food well before consumption. For viral intoxications preventive measures are specifically vaccines and care with food handling (Ministério da Saúde, 2010).

In Brazil, between 2000 and 2015, there were 209,240 cases of ill persons due to food poisoning. In the southeastern region of the country 40.2% of cases occurred; in the southern region were 34.8%; in the northeast region 14.8%; and in the central-west region 6.0%. The northern region of Brazil had 4.3% of the cases recorded, which adds up to 8,997 people with DTA (Brasil, 2015)

AIM

To compare data from fourteen years of food poisoning in the northern region of the country with the national data.

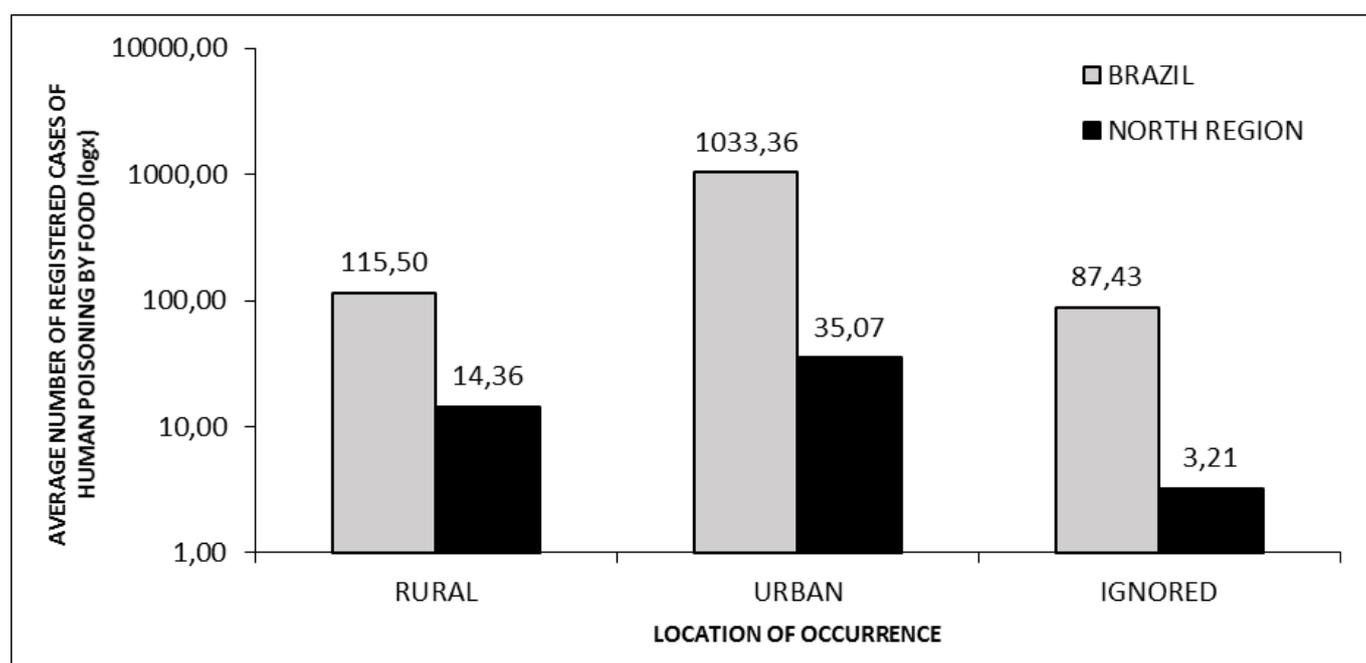
METHOD

Search done in the database of FIOCRUZ Sistema Sinitox. Regional data (<http://sinitox.icict.fiocruz.br/dados-regionais>) were withdrawn according to the following steps: In Data of Intoxication the tab " Dados Regionais " was chosen. Next, it was selected in the Years " Todos " field, in the " Norte " region field, and in the Casos/Óbitos " Casos " field. The " Aplicar " button was

selected and data were collected within the items " Casos Registrados de Intoxicação Humana por Agente Tóxico ", Casos Registrados de Intoxicação Humana por Agente Tóxico e Circunstância", "Casos Registrados de Intoxicação Humana por Agente Tóxico e Faixa Etária", "Casos Registrados de Intoxicação Humana por Agente Tóxico e Sexo", e "Evolução casos Agente Tóxico e Sexo". National data (<http://sinitox.iciet.fiocruz.br/dados-nacional>) were withdrawn according to the following steps: In Data of Intoxication the tab " Dados Nacionais " was chosen. Next, it was selected in the Years "Todos" field, in the "Norte" region field, and in the Casos/Óbitos " Casos " field. After selecting the "Aplicar" button, data was collected within the same items described in regional data. The period from 2000 to 2013 was used to compile the data. This was done within the Excel application, component of the Office suite from Microsoft Corporation. Bibliographical research was carried out in books and scientific articles, in the library of the Federal Institute of Education, Science and Technology of Amapá, Campus Macapá, located in: Rodovia BR 210 KM 3, s / n - Bairro Brasil Novo. CEP: 68.909-398, Macapá, Amapá, Brazil.

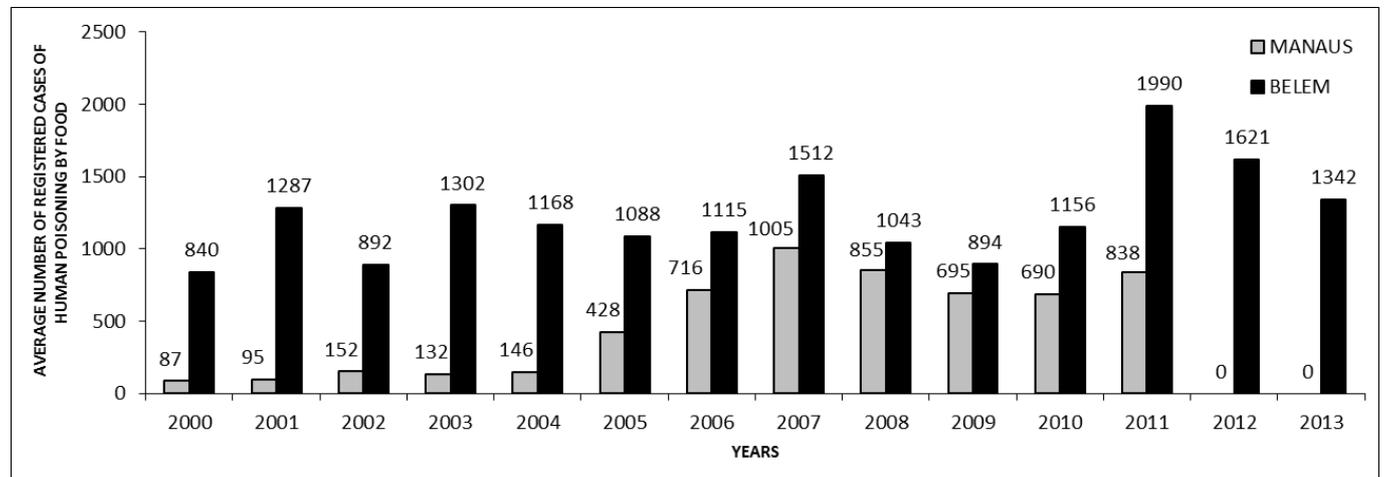
RESULTS

Graph 1 shows the average number of registered cases of human intoxication by place of occurrence. Both in Brazil and in the northern region of the country human food poisoning occurs in greater quantity in the urban area.



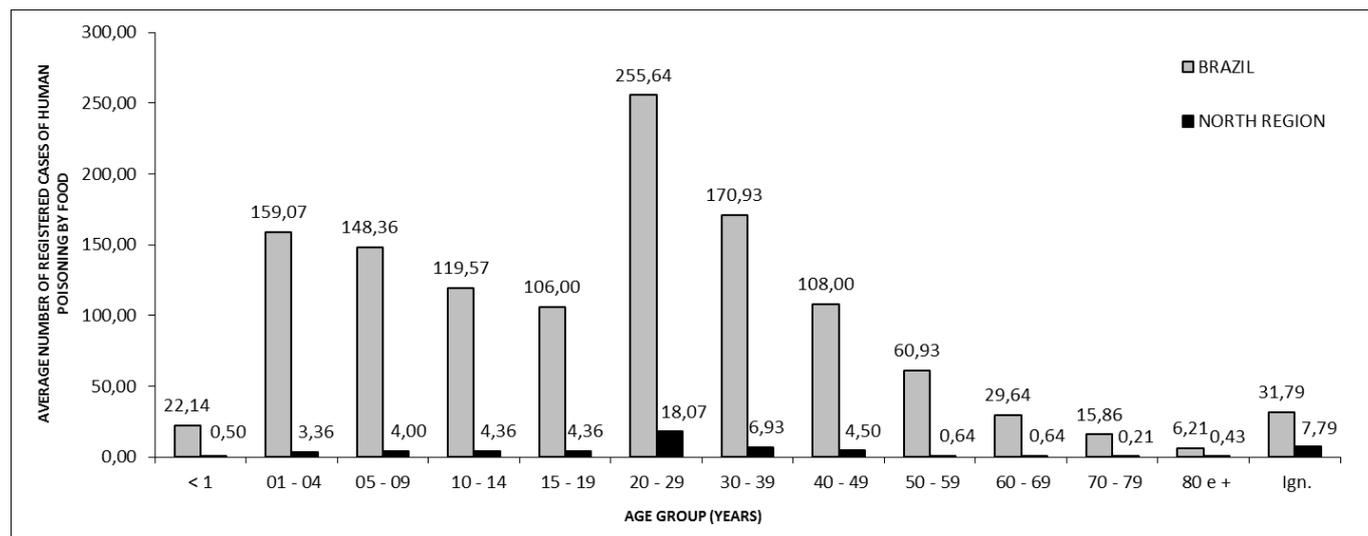
Graph 1: Mean number of registered cases of human intoxication by food by place of occurrence.

Graph 2 shows the average number of registered cases of human intoxication in the two main capitals of the northern region of Brazil per year. In Manaus, the highest number of cases occurred in 2007. In Belém do Pará, the highest number of cases occurred in 2011. In comparison, the rates of human food poisoning in the period are equivalent between the two cities.



Graph 2: Average number of registered cases of human intoxication by food in two capitals of the northern region per year.

Graph 3 shows the average number of registered cases of human intoxication by age group. Both in Brazil and in the northern region of the country, the age group with the highest number of cases of human intoxication due to food was between 20 and 29 years, and 30 and 39 years.



Graph 3: Average number of registered cases of human intoxication by food by age group.

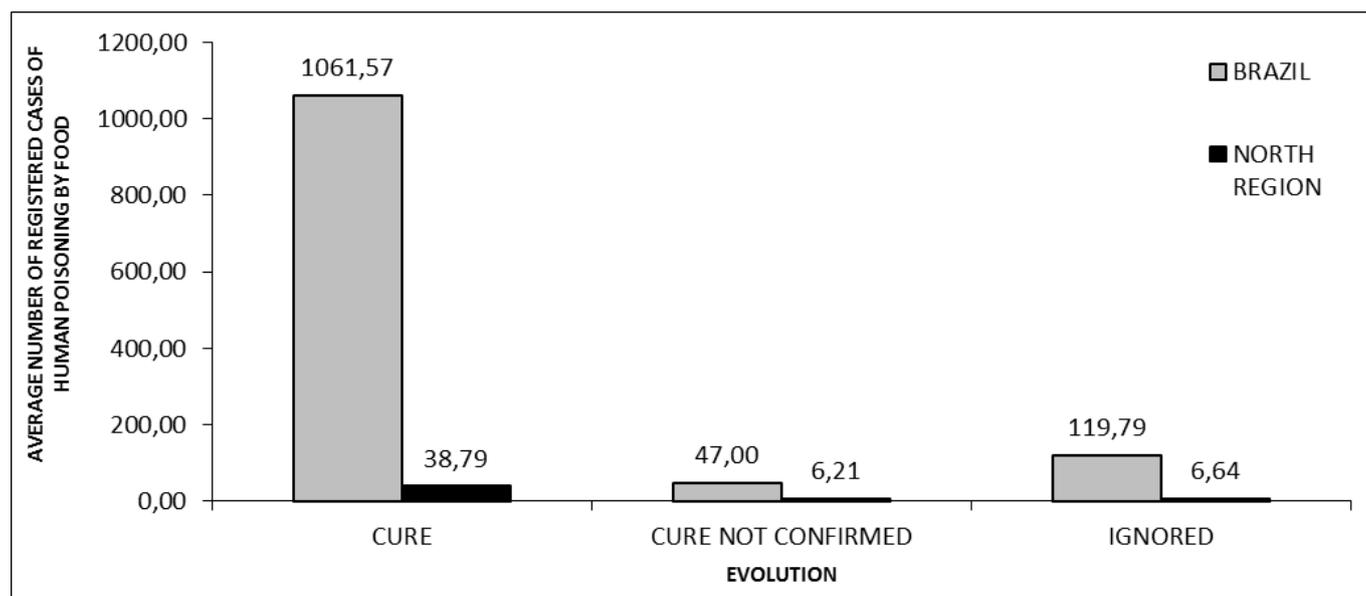
Graph 4 shows the mean number of reported cases of human intoxication by circumstance. In Brazil the number of individual cases of intoxication is greater than the number of collective cases. In the north the opposite occurs, with the number of collective cases being greater than the individual ones.

Graph 4: Average number of cases of human food poisoning by circumstance.

Graph 5 shows the mean number of registered cases of human intoxication by gender. Both in Brazil and in the northern region the highest number of cases of human intoxication occurs with the female gender.

Graph 5: Average number of registered cases of human intoxication by food by gender.

Graph 6 shows the mean number of recorded cases of human intoxication per evolution. Both in Brazil and in the northern region the data show a greater number of cases of cure.



Graph 6: Average number of recorded cases of human food poisoning by evolution.

DISCUSSION

The highest index of food poisoning occurs in urban areas (figure 1). This is probably due to changes in population eating habits and intra-regional migration. These occurred with people who lived in rural areas in search of employment and better quality of life. A higher urban population index may influence the index of people with food poisoning (Magnoni et al, 2016).

Human food poisoning rates in the period are equivalent between the two main cities in the north of the country: Belém do Pará and Manaus (figure 2). The Amazon region, and especially its two largest cities, has the same food habit. Possibly this parity is expressed both in food choice and in the intoxication rate (Brasil, 2015a).

In the northern region and in Brazil, the age group with the highest number of cases of human food poisoning was between 20 and 29 years, and 30 and 39 years (Figure 3). Probably this occurs in these age groups because they represent the economically active population of Brazil. Workers tend to feed in places with ready-made food, increasing risk and intoxication (Cavalcante et al., 2017; Silva et al., 2017).

In Brazil the number of individual cases of intoxication is greater than the number of collective cases. In the northern region the opposite occurs, with the number of collective cases being larger than the individual cases (figure 4). The greatest number of collective cases in the north of the country is probably

due to the habit of the population to eat outside the home, increasing the chances of intoxication (Bezerra et al., 2017). The northern region also has a low level of basic sanitation, which seems to influence food poisoning rates in populations with these habits (Bezerra et al., 2017a).

According to the data, both in Brazil and in the northern region the greatest number of cases of human intoxication occurs with the female gender (figure 5). Women who support their families correspond to 37.7% of the Brazilian population and have a higher average life expectancy than men. Being economically more active, they probably present a greater chance of intoxication due to food outside the home (Magnoni et al., 2016).

The data show, in Brazil and in the northern region the data show a greater number of cases of cure (figure 6). Common food poisoning is considered as a low-grade pathology and many of those affected by it do not seek a health unit. Low-grade intoxication is possibly self-managed without specialized help reaching the cure. Those who seek health services have the same or greater success (Goulart et al., 2016).

CONCLUSION

The migration of people from rural to urban areas seems to increase the number of cases of food poisoning in the latter.

In the great cities of the north of Brazil the population has a habit of eating outside the home, consuming ready meals. The low sanitary index associated with the food habits of the economically active population, mainly women, makes the number of collective intoxications in this region greater than the amount of intoxication in the country.

Despite the indices of intoxication, the low degree of virulence of most of them promotes a high degree of cure. Perhaps if there was a higher rate of basic sanitation in the country and if there was a greater stimulus to teaching good practices to producers and ready-to-eat food handlers perhaps a positive change could be observed in this scenario.

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^[1] High School Student. Technical Course in Food Federal Institute of Basic Education, Technician and Technician of Amapa (IFAP).

^[2] Biomedical. PhD in Tropical Diseases. Research Professor at the State University of Amapa (UNIFAP).

^[3] Biologist. Doctor of Tropical Diseases. Professor Researcher at the Federal University of Pará (UFPA).

^[4] Theologian. PhD in Clinical Psychoanalysis. Researcher at the Center for Research and Advanced Studies, São Paulo, SP.

^[5] Biologist. Doctor in Theory and Research of Behavior. Professor Researcher at the Federal Institute of Basic, Technical and Technological Education of Amapa (IFAP).