

Human poisoning by veterinary products in Brazil: descriptive analysis (2007 - 2022)

Gustavo Botelho de Oliveira ^a, Matheus Resende Nobre ^b.

^a Faculty of Cemichal Engineering, Universidade Federal de Lavras (UFLA), Lavras, Brasil, gustavo.oliveira14@estudante.ufla.br.

^b Faculty of Pharmacy, Universidade Federal de São João del Rei (UFSJ), Divinópolis, Brasil, matheusresendenobre@gmail.com.

Abstract. Veterinary drug poisoning is a growing problem in Brazil related to the indiscriminate use of pesticides, herbicides, insecticides and veterinary medicines in agriculture, livestock and animal health. This article discusses the causes, diagnostic and treatment challenges, and social implications of this problem. In Brazil, which stands out as one of the largest agricultural producers in the world, exposure and contamination of veterinary medicines have increased. This increased exposure represents a significant threat to human and animal health and the environment. Cases of veterinary drug poisoning affect both agricultural workers and domestic and wild animals, contributing to environmental pollution and loss of biodiversity. The diagnosis and treatment of poisoning caused by veterinary medicines is complex, due to the diversity of substances and the different symptoms that can occur in humans and animals. Furthermore, the lack of awareness about the safe use of these products and the lack of adequate regulations contribute to the persistence of this problem. This article highlights the urgent need for stricter regulations, effective surveillance and awareness strategies to mitigate the harms of veterinary drug poisoning. The protection of public health in Brazil depends on the implementation of preventive and curative measures. A comprehensive understanding of this complex issue is important to guide national policies and sustainable agricultural practices aimed at reducing the risks associated with these harmful products.

Keywords. Product poisoning, Veterinary Products, Brazil.

1. Introduction

Brazil has always been recognized worldwide for its agriculture and livestock, where, in 2020, it was considered the fourth largest agricultural exporter in the world (1). This data reflects a lot on the national economy, showing that both the world and Brazilians have a constant consumption of agricultural products (1).

However, over the years, the Brazilian people increasingly began to encounter cases of contamination by veterinary products (2). Thus, there was a need to analyze such cases, and discuss the subject, to try to understand what is causing these situations that are occurring.

Therefore, research was carried out on the topic, and some data and information were found that could be significant for the event that is the focus of this article..

2. Methodology

The study was carried out on a descriptive basis divided into 4 phases: 1- search for information; 2 - data collection; 3 - organization and analysis of the collected material and 4 - display and discussion of the results. The most current data on plant poisoning in Brazil were obtained by active search, through the information available on the DATASUS website, in the "Tabnet" tab under "epidemiological and morbidity" following to - Diseases and Notifiable Diseases - 2007 onwards (3).

The option "Brazil" and "Cases due to exogenous poisoning" were selected, finally, the toxic agent "Veterinary Products" was chosen. Cases were included between January 1, 2007 and December 31, 2022. During these years, notifications from previous years were also recorded, being totaled in the results found.

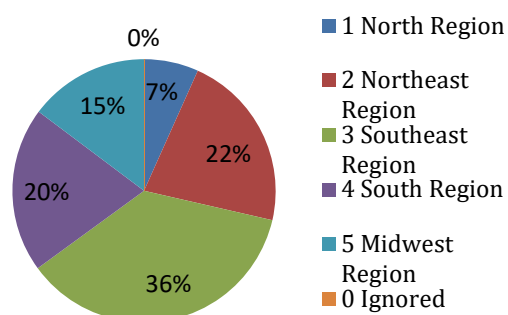
The variables collected were: Federative Unit of exposure (UF), Circumstance, Year of Notification and Final classification. The variables were analyzed as follows: Federal Exposure Unit (FU) - States with the highest frequency of poisoning, classified by the number of cases. Circumstance - Habitual, accidental, environmental use, therapeutic use, medical prescription, administration error, self-medication, abuse, food ingestion, suicide attempt, attempted abortion, violence/homicide and others. Notification Year - 2007 to 2022. Final Classification - Confirmed poisoning, exposure only, adverse reaction, other diagnosis and withdrawal syndrome.

3. Results

Graph 1 shows notifications by region of residence, registered on Sinan Net – Brazil, of exogenous poisoning due to the consumption of veterinary drugs, in the period 2007 – 2022, in all Brazilian states. The results show a greater number of cases reported in the southeast region of the country, with the northern region having the lowest number recorded.

Graph 1. Notifications by region of residence of exogenous poisonings, due to consumption of veterinary products, in the Brazilian national territory, in the period 2007 – 2022.

Graph 1 - Notifications by region of residence



Regarding the circumstances of exogenous poisonings, due to the consumption of veterinary drugs, table 1 shows such data. It can be seen from the data that more than 80% of the circumstances are cases of accidental consumption and suicide attempts. These data also refer to the period 2007 – 2022, throughout the Brazilian national territory.

Tab. 2 - Circumstances of exogenous poisoning

Circumstances	Notifications
Ign/White	499
Habitual Use	549
Accidental	6504

Environmental	189
Therapeutic use	34
Medical Prescription	5
Administration error	223
Self-Medication	204
Abuse	110
Food Intake	61
Suicide Attempt	6803
Attempted Abortion	32
Violence/murder	164
Others	293
Total	15670

In addition, we have table 2 that shows data referring to the years of exogenous poisonings, due to the consumption of veterinary drugs, and their notifications, during the period 2007 – 2022, in the Brazilian national territory. It is noted that the largest number of registered notifications occurred during the years 2018 and 2019, exceeding 1400 notifications, while in the previous years of 2014, this data did not exceed 1000 notifications.

Tab. 2 - Years of exogenous poisoning.

NOTIFICATION YEAR	NOTIFICATION
2007	328
2008	447
2009	479
2010	571
2011	767
2012	910
2013	983
2014	1163
2015	1148
2016	1131
2017	1318
2018	1498
2019	1542
2020	1164
2021	1037
2022	1184
TOTAL	15670

Finally, table 3 presents notifications by final classification of exogenous poisonings, resulting from the use of veterinary drugs, during the period 2007 – 2022, in Brazil. It is seen that the number of confirmed poisonings accounts for more than 60% of the total number of notifications, and that there are only four cases of withdrawal syndrome, showing that this classification is a tiny amount compared to the other data.

Tab. 3 - Final classification of exogenous poisonings.

Final Classification	Notification
Ign/White	1228
Confirmed Intoxicaiton	9957
Just Exposure	3957
Adverse Reaction	388
Other Diagnosis	136
Withdrawal Syndrome	4
Total	15670

All tables used were registered on Sinan Net – Brazil, made available by the Ministry of Health for public viewing.

4. Discussion

The data presented above were considered the most pertinent in relation to the subject covered, however, a focus must be placed on the graph presented, of notifications by region, and table 1, on the circumstances of the incident. However, the other tables presented also contain elements of important analysis, which will be discussed further.

To begin the analysis, graph 1 shows the percentage of reported cases of poisoning by veterinary products, divided by regions. The results were more concentrated in the Southeast and South regions, which may be due to some relevant factors. It is worth remembering that this graph only shows reported cases, so an analysis factor would be the quality and access to healthcare services, where those in the aforementioned regions have greater access to the population, and are more qualified (4). In addition to specialized service, it is extremely important to understand how the notification registration system works.

The number of cattle herds in the Southeast Region is 38.7 million heads (19.8% of the total Brazilian herd) (5). It is a fact that, for the most part, extensive livestock farming involves a high flow of veterinary products, which, even using specialized or customary labor, can cause poisoning. Typically, large properties that concentrate animal breeding are far from hospitals and health care, often making it impossible to provide care and in mild cases of poisoning, there is no registration. That said, it is worth questioning the increase in underreporting

and the reliability of the data displayed on the Data SUS website.

Table 1, which shows the circumstances, presents a majority data result in suicide attempts and accidental ingestion, which can be related to the regions with the highest incidence in some ways. A priori, it is important to highlight that suicide is characterized mainly by economic, social or emotional issues (6), and this economic situation is directly linked to large cities (7), which are they are mostly concentrated in the Southeast region, such as São Paulo and Rio de Janeiro (8).

Currently, Brazil occupies 3rd place in the world ranking of countries with the most pets in the world, totaling a population of 149.6 million pets in the country. The Market Information Commission (Coinf) of Sindan, the National Union from the Animal Health Products Industry, predicts a growing movement in the Pet segment: 15.8% in 2023; and 15% for 2024. (5). Thus, with the increase in the number of domestic animals and establishments that support them, such as feed stores and farms, the ease of obtaining veterinary products is possibly a causal factor for intentional poisoning. Many inputs that contain active ingredients regulated by human recipes are exempt for veterinary products, which allows for poisoning and bacterial resistance.

Regarding accidental ingestion, much of it occurs by people from rural areas, who do not have prior knowledge about the products consumed, which makes support and supervision difficult (7). Almost 30 million people live in rural areas (9), a very significant number when compared to the population of the entire Brazilian national territory, of approximately 203.1 million inhabitants (10). Therefore, assistance to the rural population is a significant demand in terms of access to information for everyone.

The gradual increase in livestock farming and the number of pet animals justifies the data found in table 2, in which, over the years, there has been a constant increase in the incidence of poisoning. Furthermore, the increase in bodies such as health centers and hospitals that provide health care contribute significantly to the registration of cases that were previously underreported and subsequently registered. (11). However, in the years between 2020 and 2022, the world faced Covid-19, and in these years, a decrease in the number of notifications is evident. This is due to the reduction in visits to hospitals due to fear of contamination, that is, people who accidentally became poisoned, or were already using “habitual use” as shown in table 1, were exempt from seeking health care, increasing underreporting.

5. Conclusion

It was concluded that exogenous poisoning due to

the consumption of veterinary products has been growing over time, mainly in the South and Southeast regions of the country, directly promoting the cause of the regional health system, and the consumption of livestock products from the regions. shown as reasons for such growth. Furthermore, suicide attempts and accidental cases continue to be the main parameters of analysis, which deserve greater attention from researchers in the field. Finally, Brazil still presents frequent cases of poisoning, given these factors presented during the discussion, always requiring new research on the subject, since cases tend to progress/stabilize over time.

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