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NOTIFICATIONS OF EXOGENOUS INTOXICATION IN CRATEÚS, CEARÁ: AN ANALYSIS FROM 2014 TO 2023

NOTIFICAÇÕES DE INTOXICAÇÃO EXÓGENA EM CRATEÚS, CEARÁ: UMA ANÁLISE DE 2014 A 2023

NOTIFICACIONES DE INTOXICACIÓN EXÓGENA EN CRATEÚS, CEARÁ: UN ANÁLISIS DE 2014 A 2023

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ABSTRACT
Objective: The objective was to describe epidemiological data on exogenous intoxication, reported by the municipality of Crateús, Ceará, Brazil, from 2014 to 2023. **Methods:** This is a cross-sectional and descriptive epidemiological study, conducted in September 2024, based on notifications of exogenous intoxications reported in Crateús. Data collection was carried out through Tabnet from the Department of Informatics of the Unified Health System (DATASUS). **Results:** A total of 600 cases of exogenous intoxication were reported by the municipality of Crateús, with a predominance of females (70%) and mixed race/skin color individuals (67.3%). Medications were the main toxic agent (71.3%), and suicide attempts were the main circumstance (71.8%). The incidence of cases peaked in 2022, with 125.6 cases per 100,000 inhabitants. **Final considerations:** DATASUS data are essential for situational diagnosis and the creation of public health measures, promoting well-being and guiding decision-making by managers.
Keywords: *Epidemiology; Public health; Primary Prevention.*

RESUMO
Objetivo: Objetivou-se descrever dados epidemiológicos sobre intoxicação exógena, notificados pelo município de Crateús, Ceará, Brasil, entre 2014 a 2023. **Métodos:** Trata-se de um estudo epidemiológico transversal e descritivo, realizado em setembro de 2024, baseado nas notificações de intoxicações exógenas efetuadas em Crateús. A coleta de dados foi realizada no Tabnet do Departamento de Informática do Sistema Único de Saúde (DATASUS). **Resultados:** Foram notificados, pelo município de Crateús, 600 casos de intoxicação exógena, predominando o sexo feminino (70%) e a cor/raça parda (67,3%). Medicamentos foram o principal agente tóxico (71,3%), e a tentativa de suicídio, a principal circunstância (71,8%). A incidência do agravo atingiu seu pico em 2022, com 125,6 casos por 100.000 habitantes. **Considerações finais:** Os dados do DATASUS são essenciais para o diagnóstico situacional e o desenvolvimento de medidas de saúde pública, promovendo o bem-estar e orientando a tomada de decisão dos gestores.
Descritores: *Epidemiologia; Saúde pública; Prevenção Primária*.

RESUMEN
Objetivo: Se objetivó describir datos epidemiológicos sobre intoxicación exógena, notificados por el municipio de Crateús, Ceará, Brasil, entre 2014 y 2023. **Métodos:** Se trata de un estudio epidemiológico transversal y descriptivo, realizado en septiembre de 2024, basado en las notificaciones de intoxicaciones exógenas efectuadas en Crateús. La recolección de datos se realizó en Tabnet del Departamento de Informática del Sistema Único de Salud (DATASUS). **Resultados:** Se notificaron, por el municipio de Crateús, 600 casos de intoxicación exógena, predominando el sexo femenino (70%) y el color/raza parda (67,3%). Los medicamentos fueron el principal agente tóxico (71,3%) y el intento de suicidio, la principal circunstancia (71,8%). La incidencia del agravio alcanzó su pico en 2022, con 125,6 casos por cada 100.000 habitantes. **Consideraciones finales:** Los datos de DATASUS son esenciales para el diagnóstico situacional y el desarrollo de medidas de salud pública, promoviendo el bienestar y orientando la toma de decisiones de los gestores.
Descriptores: *Epidemiologia; Salud pública; Prevención primaria.*

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INTRODUCTION

Exogenous poisonings are abnormal signs manifested in the body of people who have had contact with chemical substances, either by ingesting large amounts of medication or by exposure to toxic substances, such as household cleaning products. Although contact is sought to be minimized, it can occur directly, through the ingestion of the product, or indirectly, through contact with the mucous membranes of the skin[1].

Since 2016, according to Ordinance No. 204, of the Ministry of Health, exogenous poisonings have been immediately notified in the Notifiable Diseases Information System (SINAN), both for suspected and confirmed cases. This obligation for the professionals who care for these people aims to attest to the occurrence, which makes it possible to have a more comprehensive overview of the situation in each city in the country and, thus, to develop strategic public policies[2].

However, it was analyzed that many data are still underreported in several regions of Brazil, including the city of Crateús, Ceará, due to the negligence of some professionals in the correct classification and notification of information, in addition to the technological insufficiency of the city, such as the lack of electronic systems in most health care centers[2]. In this context, all these obstacles make it difficult to prevent this problem.

The objective of this study was to describe epidemiological data on exogenous poisoning, reported by the municipality of Crateús, Ceará State, Brazil, between 2014 and 2023.

METHODS

This is a cross-sectional and descriptive, documentary, retrospective epidemiological study with a quantitative approach, carried out in September 2024 by medical students at the State University of Ceará (UECE), more specifically, at the Faculty of Education and Integrated Sciences of Crateús (FAEC).

The research is focused on the analysis of data on exogenous poisoning in the municipality of Crateús, in the state of Ceará, from 2014 to 2023. Data were collected through the Department of Informatics of the Unified Health System (DATASUS) platform, using SINAN records.

The study population includes all cases of exogenous poisoning reported in the municipality of Crateús, Ceará, between the years 2014 and 2023. The sample consisted of the following variables: incidence of the disease, race/color, toxic agent involved, and circumstances of intoxication.

To calculate the incidence (number of new cases x 100,000 / total number of inhabitants in the area), population estimates of Crateús, provided by the census of the Brazilian Institute of Geography and Statistics (IBGE) from 2010 for the years 2014 to 2021, were used. For the years 2022 and 2023, estimates based on the 2022 census were used. In addition, unlike the other variables used, which covered all the reported cases, encompassing the municipality of Crateús and other neighboring regions that use the municipality's health services, the data referring to the calculation of the incidence for the disease included only the cases in which exposure to the exogenous toxic agent occurred exclusively in Crateús. In this sense, the calculation of incidence is essential for the

epidemiological analysis and for the evaluation of the progress of the frequency of this disease in the municipality.

From the data collection, the analysis was conducted by the construction of graphs and tables with the aid of the Microsoft Excel software, to represent the distribution of cases over time and among the different sociodemographic groups, and descriptive statistical analysis was performed. Subsequently, the discussion was structured based on literature published in the scientific community. Calculations were made using absolute and relative frequency and incidence calculation. As the study used secondary data from public databases and free access, there was no submission to the Research Ethics Committee. Despite this, the study was carried out in accordance with current ethical guidelines.

RESULTS

According to data obtained from 2014 to 2023, notifications of exogenous poisoning in Crateús totaled 600 cases, of which 551 occurred with exposure to the toxic agent in the municipality. Table 1 shows a significant increase in incidence from 2018 onwards, reaching its peak in 2022. The values between 2014 and 2019 show a progressive increase in the disease, while in later years there is an alternation of these numbers, with increases and decreases in an unordered manner.

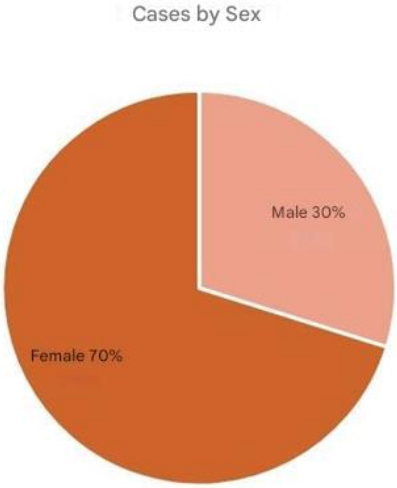
Table 1 - Incidence of exogenous poisoning in Crateús.

Year of analysis	Number of notifications	Number of inhabitants of the municipality	Incidence of the injury
2014	4	74,047	5.4
2015	16	74,358	21.5
2016	23	74,677	30,7
2017	31	74,886	41,3
2018	85	75,097	113,1
2019	93	75,303	123,5
2020	61	75,607	80,6
2021	59	76,000	77,6
2022	96	76,390	125,6
2023	83	76,600	108,3

Source: Ministry of Health/SVSA - Notifiable Diseases Information System - Sinan Net, 2024

Graph 1 shows a discrepancy between the cases in females, representing 70% of the cases, compared to males, the latter being responsible for a significantly lower number of occurrences.

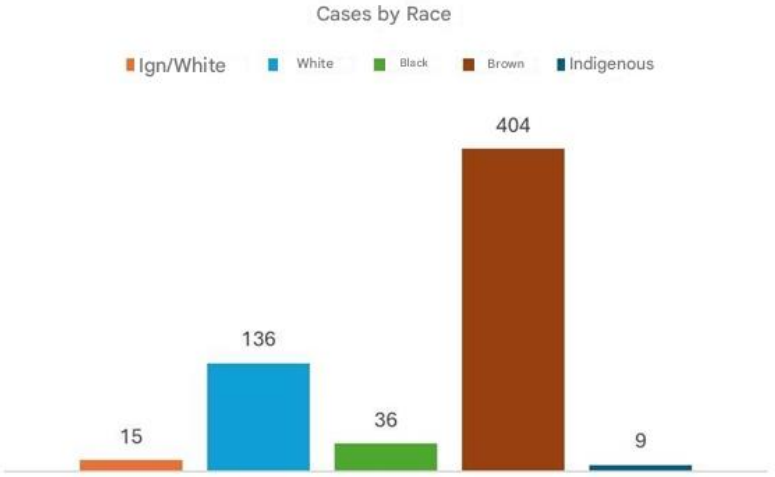
Graph 1 - Distribution of the disease exogenous intoxication by sex reported in Crateús.



Source: Ministry of Health/SVSA - Notifiable Diseases Information System - Sinan Net, 2024

In Graph 2, it can be seen that the brown color/race has 404 cases, representing about 67% of this social variable, followed by the white color/race. The black population also presents expressive numbers, while the categories Ignored/White and indigenous represent a considerably smaller portion of the occurrences.

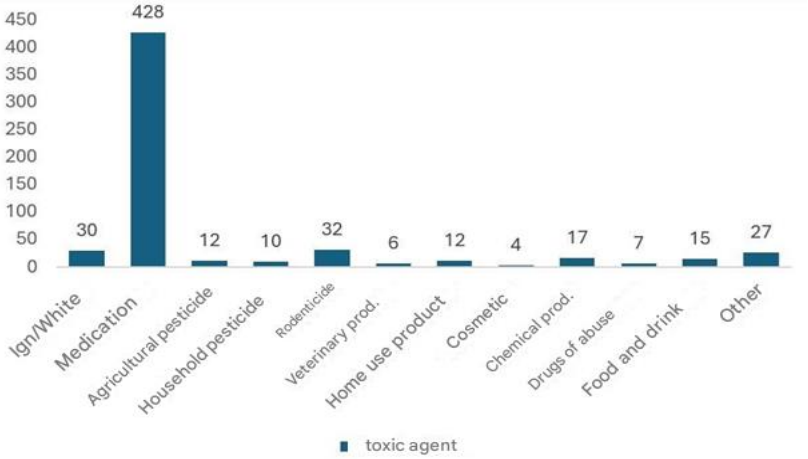
Graph 2 - Distribution of exogenous poisoning disease by color/race reported in Crateús.



Source: Ministry of Health/SVSA - Notifiable Diseases Information System - Sinan Net, 2024

Graph 3 presents data on the most frequent toxic agents in cases of exogenous poisoning. It is noted that medicines are the main agent involved in poisonings, representing about 71% of the occurrences, followed by rodenticides, which correspond to 5% of the cases.

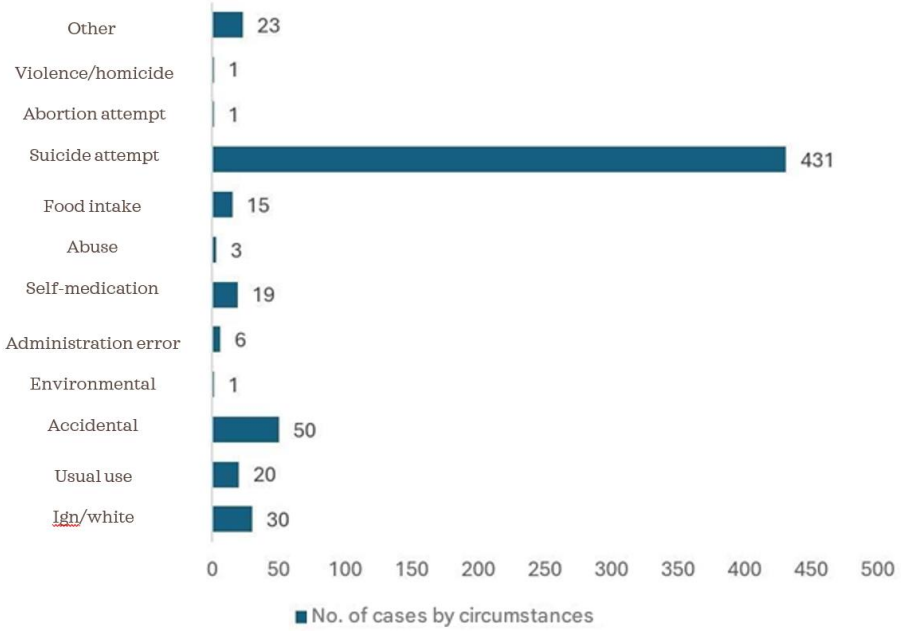
Graph 3 - Toxic agents causing exogenous poisoning notified in Crateús.



Source: Ministry of Health/SVSA - Notifiable Diseases Information System - Sinan Net, 2024

Graph 4 shows the most prevalent circumstances of exogenous intoxication, with suicide attempts being the most frequent, representing 71.8% of the occurrences, followed by accidental cases, which correspond to 8% of the incidents.

Graph 4 - Circumstances of exogenous poisonings reported in Crateús.



Source: Ministry of Health/SVSA - Notifiable Diseases Information System - Sinan Net, 2024

The analysis of the data indicates that exogenous poisoning in Crateús is associated with social and gender factors, with women and brown people being the most vulnerable groups. In addition, the use of medications as the main toxic agent suggests the presence of underlying mental health issues, since suicide attempts are the main motivation for these poisonings.

DISCUSSION

According to Table 1, it is observed that the population of the municipality has increased over the years and that the incidence of the disease has shown advances and declines during the period analyzed. This shows that the disease is not directly related to population growth, but rather to social variables. In 2014, there was a low number of notifications of exogenous poisonings, which may be related to the fact that Ordinance No. 1,271, which defines the National List of Compulsory Notification of diseases, injuries, and public health events, was only published by the Ministry of Health in 20143. This indicates that the low expression of notified cases of the disease under analysis is possibly due to the high rate of underreporting of the data that occurred before the publication of this ordinance.

In addition, the year 2022 stands out as the period analyzed with the highest incidence of exogenous poisoning, with 125.6 cases for every 100,000 inhabitants[4,5]. This high incidence, when associated with the main circumstance of exogenous intoxication in 2022 — suicide attempt — shows that the increase in the numbers of the disease may be related to the fragility of mental health in the period in question[5]. This high psychological strain may be related to the historical context of that moment, as the world was facing the end of the pandemic and experiencing the marks left by Covid-19 on society[6]. In this sense, municipal initiatives for mental health care are urgent, since as exposed, emotional fragility can be linked to the increase in cases of exogenous intoxication.

It is a fact that self-harm is associated with depression, which is twice as common in women. Depression is multifactorial, but it can be the result of genetic, biological, and neuroendocrine factors linked to gender. This phenomenon is also intensified by the social inequalities that affect women, who are often exposed to trauma, abuse and repression[7].

With regard to self-inflicted violence, which includes cases of suicidal ideation, self-aggression, suicide attempts, and completed suicides. This type of behavior involves a complex and multifaceted phenomenon, influenced by psychosocial and emotional factors, gender issues, and the sociocultural acceptance of the victims. In the case of women, exogenous poisoning is often associated with these situations, and the use of toxic agents is a recurrent means in contexts of vulnerability and emotional suffering[8].

In addition, males, unlike women, tend to show greater reluctance to seek health services. The cultural conception of men as robust and invulnerable makes many perceive the disease as a sign of fragility, which leads to less self-care and greater exposure to dangerous situations. In addition, it is observed that women make more suicide attempts, while men are responsible for a greater number of suicides[9].

The highest prevalence of cases is found by brown color/race (Graph 2). What may explain this predominance is the demographic distribution of this variable in the Decentralized Health Area (ADS) of Crateús, composed of the city of Crateús itself and 10 other municipalities (Ipueiras, Poranga, Quiterianópolis, Nova Russas, Novo Oriente, Independência, Ipaporanga, Tamboril, Monsenhor Tabosa and Ararendá). According to the IBGE (2022), about 63% of the population identify themselves as brown, so this explains the discrepancy (in quantitative terms) of cases in relation to other colors/races[4].

Regarding the most prevalent toxic substances, it is observed that the main toxic agent is medicines, with 428 cases of exogenous poisoning reported in the municipality. The medications frequently involved in poisoning are analgesics, antidepressants, and anticonvulsants, each of which has its own characteristics that can aggravate the clinical picture of intoxication. This is related to self-medication, which has become a common practice, being facilitated by the sale of medicines without a prescription[10].

In addition, the abusive use of medications, especially among individuals who seek to relieve symptoms without adequate guidance, or, in more serious cases, with suicidal intentions. Accidental drug poisoning, especially among children and the elderly, is also a significant concern, often resulting from inadequate storage of medications[10].

The second main toxic agent is rodenticides, which are still widely used for rodent control and easily accessible to the population due to their low cost and availability in markets and agricultural product stores. In Brazil, it is common to use the "chumbinho", which is often used irregularly, especially where sanitation is precarious. In addition, the "pellet" is widely used in suicide attempts, which is the main circumstance in which poisoning by rodenticides occurs[11].

The analysis of Graph 4 indicates that suicide attempts predominate in relation to other circumstances due to exogenous intoxication, representing approximately 72% of the reported cases. In this context, suicidal behavior has several aspects that must be considered, such as social, cultural, psychological, among others. According to the literature, most non-lethal suicide attempts are neglected by the family and health professionals. In other words, it is a stigmatized condition in society, where dialogue is inexpressive. In addition, these non-lethal suicide attempts are signs that a new attempt may occur, increasing the likelihood of death compared to a person who has never attempted suicide. Therefore, it is important to identify these cases and promote preventive actions and treatment for people in these situations[12].

Another circumstance is accidental poisoning, which is present in the background, evidencing the aggravation triggered by the ease of access to toxic products and the lack of care in storage, such as protecting from light and keeping in an airy place, in addition to paying attention to expiration. For this reason, the Printed Educational Material (MEI) validated by the Unified Health System (SUS) was developed as a way to promote health and raise awareness about the handling and storage of chemical substances[13].

FINAL CONSIDERATIONS

It is concluded, therefore, that the incidence of health problems presents unstable values, which strengthens the idea of an inefficient public policy, since it cannot control them. In addition, a quantitative and qualitative context is observed in relation to race/color, evidenced by the considerable increase in the brown population, interconnected with the most vulnerable social conditions, as well as the predominance of the female public. In this context, drug poisoning is analyzed, which is strongly related to the culture of self-medication, and the issue of suicide attempts, which are very stigmatized and treated as a taboo.

Thus, considering that the target audience is female, that the most prevalent means of poisoning include medications and rodenticides, and that the situations involve both

suicide attempts and accidents, it is possible to obtain a clearer view of reality, enabling the promotion of strategic actions that give visibility to this population, offering them new perspectives on life. Thus, it is necessary to implement public health policies in the municipality of Crateús aimed at mental health care, since as exposed, psychological aspects can be closely linked to the increase in cases of exogenous intoxication. Such initiatives can benefit from matrix support as a tool to optimize the promotion of mental health and address other problems that may be associated with the growth of this disease[14].

The data in this study are limited to the information reported in SINAN, which does not consider the underreporting and inconsistencies that still occur in filling out the notification forms, both for suspected and confirmed cases.

It is expected, with this, to stimulate the development of other studies on the subject, including the elaboration of new research on the difficulties faced to develop and implement public policies against exogenous poisoning, so that this population health problem can be prevented and treated.

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