



INTOXICATION BY DRUGS OF ABUSE IN BRAZIL: A RETROSPECTIVE STUDY

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ABSTRACT

Drug sales have grown all over the world and intoxications resulting from the non-rational consumption of such substances have represented an important public health problem. The present study aimed to carry out an epidemiological survey to identify the time-spatial distribution pattern of drug intoxications in Brazil and in their respective administrative regions, considering their distribution by gender and age, in the period between 2011 and 2021. For this purpose, data available on the Health Brazilian government website (datasus.saude.gov.br/) were evaluated, and these data were made available in spreadsheets and statistically evaluated. It was observed that there was an increase in the prevalence of drug poisoning in the period between 2017 and 2021, particularly in the North, Southeast and Midwest regions, with emphasis on women and adolescents/young

adults, and this epidemiological behavior may be related with the practice of self-extermination. Finally, based on the results obtained, it is worth highlighting the importance of the practice of pharmaceutical care as a way of minimizing the risks inherent to the practice of self-medication and the intoxication processes resulting from this process.

KEYWORDS: Intoxication. Pharmaceutical care. Pharmaceutical epidemiology.

INTRODUCTION

The consumption of drugs of abuse, both licit and illicit, has increased in recent years, but it is known that such substances can cause serious harmful effects to the health of their users. For example, the use of drugs such as crack and cocaine can cause chronic problems in the

health of the individual who consumes it, which may result in mental, social and physical harm, such as circulatory problems, lung problems, cardiac arrhythmias, chest pain, seizures, hyperthermia, strokes, hypertensive crises, impaired judgment and psychotic disorders.^[1,2]

The use of crack can bring neurocognitive damage to the main functions of the human body such as verbal memory, verbal fluency, visual memory, learning ability, attention, alertness, executive functions, among others. In addition, it can cause damage to the airways, cardiovascular system, muscle necrosis, neurological and psychiatric problems.^[3,4]

In addition, the increase in the use of illicit drugs, both in Brazil and around the world, ends up raising other disorders for society, such as the increase in violence, crime, traffic accidents, drug trafficking and homicides, among others. In this sense, the problem is not only related to the individual who consumes the drug, but also to family members and the entire population who are directly or indirectly affected.^[5]

On the other hand, other substances whose consumption is permitted, despite being considered legal drugs, are also not free of risk and consequences similar to those described for the consumption of drugs such as crack and cocaine. Chronic alcoholism and the use of psychotropic drugs have been considered serious disorders and important public health problems, being as impactful as the consumption of drugs considered illicit and that offer greater risk to those who consume them.^[6]

There are several known factors that can lead individuals to adhere to the practice of licit and illicit drug consumption, many of which are related to the intention of self-assertion and insertion in social groups, but other factors may possibly trigger this behavior, among which the feeling of inability to solve problems or to deal with situations of stress, insecurity and demands.^[7]

It is known that in recent years several feelings of insecurity have started to occur in a large part of the population, possibly influencing the practice of drug consumption, therefore, the present work aimed to evaluate the profile of drug consumption in the Brazilian population, as well as in its political-administrative regions, defining its consumption profile by gender and age, as well as theorizing the possible triggering factors of this practice.

MATERIALS AND METHODS

This is a cross-sectional and retrospective study, with an approach to drug intoxication, in

which sociodemographic data from Brazil and its sociopolitical regions (South, Southeast, Midwest, North and Northeast) were analyzed. Data collection was carried out using official government websites as a source of research, from 2011 to 2021, namely DATASUS (<https://www.datasus.saude.gov.br>) and IBGE - Instituto Brasileiro de Geografia e Estatística (<https://www.ibge.gov.br>), to access the prevalence of drug poisoning and associated factors. The variables analyzed were: sex, age group and area of occurrence.

This is a cross-sectional and retrospective study, with an approach to Intoxication by drugs of abuse in Brazil, in which sociodemographic data from Brazil and its socio-administrative regions (South, Southeast, Midwest, North and Northeast) were analyzed. The data collection was carried out using official government websites as a research source, from 2013 to 2022, namely DATASUS (www.datasus.saude.gov.br), to access the prevalence of drug abuse in the country. The variables analyzed were: gender, age group and area of occurrence.

For the collection of the variables: sex, age group and zone of occurrence, the information available in DATASUS was used, which were processed and analyzed statistically. Statistical evaluations were performed by determining the variance and significant differences between the means obtained, using the bioestat 5.0 software as a support tool.

RESULTS AND DISCUSSION

The behavior of the occurrence of intoxication by drugs of abuse in Brazil in the period stipulated for the present work is shown in figure 1.



Figure 1: Occurrence of intoxication by drugs of abuse in Brazil (2013-2022).

*significant difference ($p < 0.01$) compared to other years

**significant difference ($p < 0.0001$) compared to the years 2012 to 2016

Source: the authors

It is observed that the year 2019 corresponded to the period with the highest occurrence of intoxication by drugs of abuse (AD), with this year's incidence being significantly higher ($p < 0.0001$) than that observed in all other years of the historical series evaluated in the present research.

In addition, it was possible to observe that there was a significant increase ($p < 0.0001$) in the number of cases of intoxication by AD from 2017, to the detriment of the period between the years 2013 to 2016. This behavior in the incidence of intoxication for drugs is certainly closely linked to the increase in the consumption of such substances.

Corroborating this hypothesis, in a world report on drug use prepared by UNODC (United Nations Office on Drugs and Crime)^[8], with data on the consumption of these substances, referring to the period between 2006 and 2017. In this study, an increase in the number of individuals suffering from disorders resulting from drug use was exposed, as well as a significant increase in the number of users of different types of drugs, such as opioids, whose world consumption increased by 56% in 2017 compared to 2016, such an increase being justified, in part, by the lack of prevention and treatment strategies, since only one in seven people with disorders resulting from the misuse of drugs receives treatment, thus maximizing the possibility of dependence and continuity of practice.

Also according to the aforementioned report^[8], in 2017 it was observed that the estimate on the global illicit manufacture of cocaine determined a total of 1976 tons produced, this amount being 25% higher than that identified in 2016, the same being observed in relation to the amount of cocaine seized, which in 2017 increased by 13% compared to the previous year, being the largest amount ever seized in the evaluated time series.

With regard to the incidence of intoxication by drugs of abuse in the different administrative regions (AR) of Brazil, it is observed that South and Southeast regions had higher rates than those observed in Midwest, North and Northeast regions, with emphasis on the Southeast region, which throughout the evaluated period, presented a significantly higher incidence ($p < 0.0001$) in relation to the other AR, as shown in figure 2.

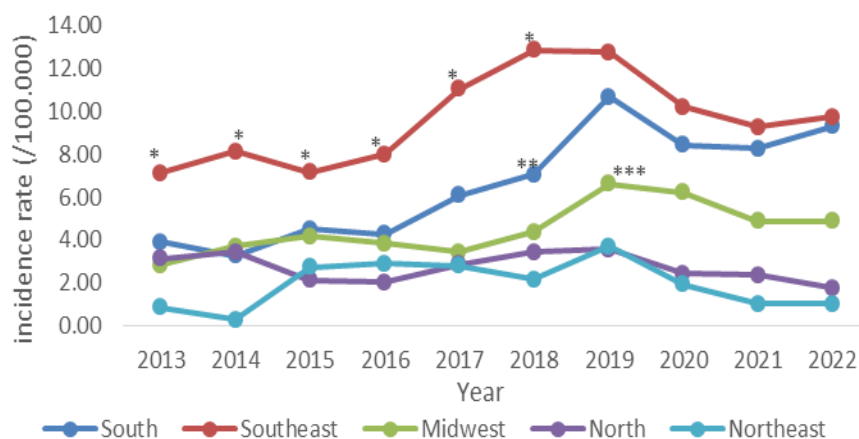


Figure 2: Incidence of intoxication by drugs of abuse in the different administrative regions of Brazil (2013-2022).

* Significant difference ($p < 0.0001$) compared to other regions

** Significant difference compared to the Midwest, North and Northeast regions

*** Significant difference compared to the North and Northeast regions

Source: the authors

It is also possible to highlight that the South region showed a progressive increase in incidence, with emphasis on the year 2017, from which the incidence rates differed significantly ($p < 0.0001$), in relation to the Midwest, North and Northeast (figure 2). This progressive expansion of the incidence of AD intoxication was also observed in the Midwest region, however only from 2019 onwards, tending to reach levels close to those of the South and Southeast regions and differing significantly ($p < 0.0001$) from the North regions and Northeast.

The increase in drug consumption in the South, Southeast and Midwest regions is probably linked to the fact that the main entry and exit routes for narcotics are ports and airports, which are more abundant and have a greater flow of goods and people in these regions, mainly in the Southeast region. According to UNODC, in 2020 cocaine production increased by 11% compared to 2019, representing a level never reached before, equivalent to 1982 tons and, with regard to cocaine, almost 90% of the amount seized in the year 2021 was trafficked in containers and/or by sea.^[8]

It should be noted that the south and southeast regions have a higher population density when compared to the other ARs, a factor that ends up influencing the establishment of illegal drug trade establishments, as well as criminal factions dedicated to this practice. In addition,

despite the Midwest region having a lower demographic density than the Northeast region, the greater territorial proximity to the Southeast region and to trafficking routes may influence in the sense that in the last years of the evaluated time series there has been an increase of intoxications by AD in that region, differing significantly from what was observed in the north and northeast regions.

With regard to the occurrence of AD intoxication in relation to gender, there was a significant predominance ($p < 0.0001$) in men to the detriment of that observed in women in all years evaluated, with a progressive and increasing trend from the beginning of the interval time established for the present research, reaching a peak of poisonings in 2019. It should be noted that, despite the occurrence of AD poisoning being lower among women, the epidemiological behavior showed a trend similar to that observed among men over the years, with a peak in 2019, which was significantly higher than the morbidity observed in all other years evaluated.

According to Silva, Souza and Peres^[9], women tend to have less affection for the practice of drug consumption because they are traditionally linked to a stereotype of docility, domesticity and fragility, which is a conservative view of the role of women in the context of the family and society, so that women are ashamed and blamed for episodes of intoxication because they do not find a correlation between the effects of drugs, such as alcohol, with the normative pattern of the female gender.

However, it should be noted that, as already mentioned, there was a progressive increase in drug intoxication, and consequently in the consumption of such substances among women, with a peak in 2019, and this increase is possibly related to the trend of change in the normative standard of this gender nowadays. According to Silva, Souza and Peres [9], with the loss of adherence to the pattern of docility, domesticity and fragility and adherence to normative male standards of aggressiveness, freedom and strength, women resignify drug use, associating this practice as something libertarian.

With regard to AD poisoning cases in relation to age, it is observed that the age group from 20 to 39 years old, followed by the age groups from 40 to 59 years old and from 15 to 19 years old, the latter being the stage most linked to the concept of adolescence, whose coefficients differed significantly ($p < 0.0001$) from those observed in all other age groups, as shown in table 1.

Table 1: Incidence of intoxication by drugs of abuse in Brazil, by age group (2013-2022).

age	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
< 1 year	0.05	0.03	0.05	0.04	0.05	0.05	0.06	0.04	0.04	0.04
1 - 4	0.01	0.02	0.01	0.02	0.02	0.03	0.04	0.03	0.02	0.02
5 - 9	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
10 - 14	0.10	0.13	0.13	0.15	0.18	0.20	0.22	0.10	0.08	0.08
15 - 19*	0.64	0.77	0.70	0.75	0.88	1.10	1.18	0.75	0.60	0.56
20 - 39*	2.72	2.88	2.70	2.83	3.94	4.42	4.79	3.88	3.55	3.58
40 - 59*	1.04	1.11	1.02	1.05	1.47	1.76	2.04	1.68	1.62	1.77
60 - 64	0.07	0.08	0.07	0.10	0.12	0.14	0.17	0.14	0.13	0.15
65 - 69	0.04	0.05	0.05	0.06	0.07	0.08	0.09	0.08	0.07	0.07
70 - 79	0.03	0.04	0.04	0.04	0.04	0.05	0.05	0.04	0.05	0.06
80 +	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

* Significant difference ($p < 0.0001$) in relation to the other age groups, in the entire time series evaluated

Source: the authors

The more pronounced consumption of psychoactive substances among adults may be due to several factors, among which the fact that they have a certain financial independence, since most of them are already inserted in the labor market, which, in terms of purchasing power, it represents an absence or less dependence on family members to encourage the acquisition of such substances.

According to Horta et al.^[10], spending power can influence a greater possibility of drug consumption, since individuals who have greater purchasing power and who live in areas with a higher concentration of income and/or in regions with a higher gross domestic product (GDP), such as the South, Southeast and Midwest, are more exposed and may show a more biased behavior towards drug consumption.

It should be noted that the data presented in this research represent patients who were referred or sought help in health centers, starting to represent reported cases of intoxication, often not corresponding to the behavior pattern among young people, who are in an age group more focused on experiencing new sensations and following the behavior patterns of friends, not paying attention to the risk they take when using drugs of abuse, and often ending up not seeking medical help.

In this sense, Pratta and Santos^[11] point out that many adolescents start to use psychoactive substances, whether legal or not, first out of curiosity and later under the influence of friends. According to Horta et al.^[10] there are stages of life in which people become more curious and

open to new experiences, with this characteristic being clearer among adolescents.

Another factor that may explain the morbidity of intoxication by drugs of abuse concerns anxiety and depression, psychiatric disorders identified as the main public health problems today. Depressive and anxiety disorders imply expenditures in the order of 1 trillion dollars per year in lost productivity^[12] and bring with them a high demand for substances that can reverse these disease conditions.

Thus, the abuse of illicit drugs to control anxiety and depression can be a measure adopted by many individuals. According to Pratta and Santos^[11] one of the factors identified as justifying adherence to drug use is anxiety. Likewise, Dalpiaz *et al.*^[13] identified depression and sadness as triggering factors for drug use, when assessing the risk factors that led users of a psychosocial care center (CAPS) for alcohol and drug addicts to adhere to these practices. In fact, the use of drugs of abuse is closely related to the search for a sensation of pleasure that overcomes depression and anxiety, which is a result of this practice. In general, drugs act directly or indirectly by activating the brain reward system, which commonly leads to an increase in dopamine and other neurotransmitters, being a reinforcing signal associated with the feeling of pleasure, and causing uncontrolled use of such substances, resulting, in large part, in intoxications.^[14]

However, the importance of abusive consumption of licit psychotropic drugs in an uncontrolled manner and without the monitoring or guidance of a qualified professional is highlighted, since several drugs belonging to this class act in an analogous way to drugs of abuse. In Brazil, although the trade of such substances is only viable upon presentation and withholding of prescription, there is still a high occurrence of sale illegally, with permissiveness of the pharmaceutical professional, a practice that is unethical and criminal.

The abusive use and sale of psychotropic drugs illegally is still a veiled reality, but of great concern in Brazil, a fact that can lead to intoxication and dependence. As an example, Santana and Neto^[15] evaluated the number of seizures of benzodiazepines in the city of Recife, Pernambuco – Brazil and observed a growing and worrying number of seizures, in which most cases occurred together with illicit drugs such as marijuana or crack, demonstrating the intimate association of the indiscriminate use of licit psychotropics with drugs of abuse.

Benzodiazepines are the main drugs used to treat sleep and anxiety disorders and their use has increased in recent years, fostering the emergence and growth of the illegal marketing market, and consequently the irrational and indiscriminate use, a factor that can imply in the occurrence of dependence, abuse and intoxication. Still according to Santana and Neto^[15], the indiscriminate use of such substances is associated with cases of suicide and traffic accidents, bringing to the fore the demand for a greater policy of control of their access.

Freitas, Sebben and Arbo^[17] evaluated acute intoxications by medications and drugs of abuse in the state of Rio Grande do Sul between 2016 and 2020 and observed that benzodiazepines and antidepressants represented the medications most linked to reported cases of intoxication, despite the fact that they are sold under special control, and can only be dispensed by withholding a prescription.

Likewise, Rodrigues and Andrade^[16] evaluated the indiscriminate use of Ritalin® among students, with the aim of improving academic performance. This drug is prescribed for the treatment of various disorders, including ADHD (Attention Deficit Hyperactivity Disorder), but it can only be marketed with a medical prescription and prescription retention, since in addition to inducing several adverse reactions, it can also lead to the user dependence and observed great adherence to this practice.

According to Fernandes *et al.*^[7] there are indications that Ritalin causes effects similar to those induced by illicit psychoactive substances, such as cocaine, causing feelings of euphoria and stimulation, and may even induce paranoid and schizophrenic disorders, when abused. Despite these risks, Rodrigues and Andrade^[16] pointed out that students have no difficulty in acquiring such medication, and it is even possible to do so illegally, without a medical prescription, over the internet.

Finally, the importance of the pharmaceutical professional in the management of cases of intoxication by both licit and illicit drugs is highlighted. According to Wagner and Andrade^[18], the pharmaceutical professional is fundamental in the reduction and prevention of substance abuse, given the fact that he can advise on the risks inherent in this practice. These authors point out the imminent need for specialized pharmacists to work in public health, in order to contribute to actions aimed at preventing drug consumption.

CONCLUSION

It is concluded that there has been an exacerbation in the use of drugs of abuse and prescription drugs in Brazil, with greater relevance in the Southeast, South and Midwest regions, mainly from the year 2017, with more pronounced morbidity rates among adults aged 20 to 39 years of age and among men, but with an upward trend in women as well.

It is also possible to conclude that several factors may have converged to this epidemiological behavior, among which the increase in production, the greater occurrence of psychiatric disorders such as depression and anxiety and the ease in acquiring illegally controlled medications, bringing to light the need to a critical review of the regulatory bodies' way of acting, as well as a more ethical and humanized performance of health professionals, aiming to minimize the adherence to this practice, as well as the health disorders resulting from the adherence to the consumption of such substances.

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