IMPACTS OF AGROCHEMICAL USE IN THE STATE OF GOIÁS: A STUDY OF THE HEALTH REGIONS OF NORTHEASTERN GOIÁS

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ABSTRACT

The article discusses the consequences of the intensive use of pesticides in Goiás agriculture, highlighting the impacts on public health and the environment. The study has an exploratory character and uses secondary data from sources such as DataSUS and the Mauro Borges Institute to analyze notifications of exogenous intoxications by pesticides. The analysis covers the period from 2010 to 2023 and focuses on the health macro-regions of northeastern Goiás. The results indicate a significant increase in the production of soybeans, sugarcane, and corn and in cases of intoxication and underreporting, highlighting the need for improvements in monitoring systems and stricter public policies to protect human health and the environment.

Keywords: Agrochemicals; Human Health Risk; Health Research Agenda.

INTRODUCTION

In recent decades, Brazil has established itself as one of the largest consumers of pesticides in the world, which has generated significant impacts on public health, especially in areas of intense agricultural production. Regulatory flexibility, adopted as a strategy by the agribusiness sector, played a crucial role in this context by allowing the expansion of pesticide use with less rigor in control and supervision (GURGEL; GUEDES; FRIEDRICH, 2021; DUTRA; SOUZA, 2022).

In Goiás, one of the main concerns arising from the indiscriminate use of pesticides is the increase in intoxication cases. However, the underreporting of these cases constitutes a worrying challenge, which hinders the understanding of the true dimension of the problem. The absence of effective monitoring and notification systems compromises the accurate assessment of the magnitude of intoxications and their long-term consequences. In this sense, knowledge of the predominant agricultural crops, the types of pesticides used, and their toxicological characteristics can be fundamental to predicting environmental contamination and human intoxication, serving as an alert so that health professionals can guide Health Surveillance actions (TOSETTO; ANDRIOLLI; CHRISTOFFOLI, 2021).

This study integrates research developed within the scope of the Scientific Initiation Scholarship Program, which resulted in the production of two manuscripts: one of descriptive exploratory and bibliographic analysis, and another of exploratory research with analysis of secondary data. The main objective of this study is to analyze the relationship between pesticide use and its impacts on human health, focusing on the health macro-regions of northeastern Goiás. In this expanded abstract, the main results of the study will be presented.

METHODOLOGY

This is a descriptive analysis of secondary data on notifications of exogenous intoxications resulting from the use of medications and agrochemicals, with a quali-quantitative approach. The information was obtained through the website of the Department of Informatics of the Ministry of Health (DataSUS), the SINAN Goiás database, the Mauro Borges Institute, and IBGE. Data was analyzed regarding the main agricultural crops, the morbidity of municipalities belonging to the health regions Northeast I and Northeast II between the years 2010-2023, the main ones being neoplasms, reproductive and neurological diseases in these municipalities, in addition to the notifications of exogenous intoxications registered per year, per municipalities and region/UF of residence, as well as the classifications of the types of intoxication (acute and chronic), the main diagnostic methodologies used, and the most common circumstances of intoxication prevalent in Goiás.

RESULTS

The state of Goiás, recognized as one of the main agricultural hubs in Brazil, has shown a growing dependence on agrochemicals in its agricultural practices. The results show a significant increase in cases of pesticide intoxication in the state between 2010 and 2023. In this period, 4,326 cases of single acute exposure, 418 of repeated acute exposure, and 25 of chronic exposure were recorded. The data reveals that the use of pesticides intensified over the analyzed period, correlating with the increase in intoxication notifications. Furthermore, a predominance of acute exposures is observed, indicating that contact with pesticides usually occurs incidentally and immediately (DATASUS, 2024).

In the municipalities of the health macro-region of northeastern Goiás, such as Posse, Alvorada do Norte, and Abadia, the increase in agricultural production, especially of soybeans, corn, and sugarcane, reflects the trend observed throughout the state of Goiás. Between 2010 and 2022, there was a significant expansion of cultivated areas. In 2022, the harvested area of soybeans in Goiás reached 85,138 hectares, with a production of 282,697 tons, while corn, although with annual variations, reached 233,915 tons produced on 29,685 hectares. Sugarcane also maintained a constant production of hundreds of thousands of tons. In Northeastern Goiás, for example, soybean production was 106,785 tons, indicating a growing insertion of the region into agribusiness (SILVA, 2015; IBGE, 2024).

Furthermore, underreporting was identified in the study as a critical problem, exacerbating the difficulty of assessing the true magnitude of the impact of pesticides on public health. It is estimated that for every reported case, 50 others are not reported, mainly due to lack of access to health services and inadequate notification procedures (OTERO et al., 2024).

This research also revealed that the majority of confirmed intoxications were diagnosed clinically, which reflects the lack of adequate laboratory infrastructure in the region. The effects of pesticides on human health can range from acute symptoms, such as nausea, headaches, and respiratory difficulties, to more serious chronic consequences. The research results showed a significant increase in cases of

neoplasms, neurological disorders, and reproductive disorders in the studied area. The municipalities of Posse, Alvorada do Norte, and Abadia stood out for the high incidence of neoplasms, with Posse recording a constant growth in cancer cases over the last decade, totaling 204 reported cases between 2010 and 2020 (TABNET).

Furthermore, a high incidence of neurological disorders was found in municipalities such as Posse, São Domingos, and São João D'Aliança, where exposure to pesticides, such as Paraquat and Glyphosate, has been associated with an increased risk of neurological diseases. This relationship led to the implementation of stricter control measures, such as the ban of Paraquat by Anvisa in 2020, due to its proven neurotoxic effects. The analysis also suggests that chronic exposure to organophosphates can result in delayed polyneuropathy, characterized by symmetric muscle weakness and sensory changes, highlighting the importance of effective public health policies that prioritize continuous monitoring and prevention (ANVISA, 2020).

Regarding reproductive disorders, the municipalities of Posse, Alvorada do Norte, and Cavalcante were identified as critical areas, possibly due to the intensive use of pesticides that affect the oxidative status of rural workers. These findings indicate a strong correlation between pesticide exposure and the increase in serious diseases in these regions, underlining the urgent need for stricter public health policies, as well as prevention and continuous monitoring measures (IBGE, 2022).

CONCLUSION

The research emphasizes the importance of a multidisciplinary and continuous approach to understanding the effects of pesticides on human health. Therefore, it is essential to develop agricultural policies that ensure population safety and environmental sustainability. Although descriptive studies provide an initial view, experimental and analytical research is indispensable to understand the causes and effects of these impacts. With the increase in the cultivation of soybeans, sugarcane, and corn in recent years in the Northeast I and Northeast II health regions, significant impacts on human health are observed, including high rates of neoplasms, neurological diseases, and hormonal dysfunctions. Finally, it is essential to conduct continuous research to guide safe and sustainable agricultural policies and practices.

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