



Epidemiological Profile of Viral Hepatitis in the Regions of Brazil - Characteristics of Notified Cases According to Etiologic Agent in the Years 2000 to 2022.

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ABSTRACT

Introduction: Hepatitis refers to viral infections that affect the liver and can usually present five etiologies, from virus A to virus E. The clinical manifestations depend on the viral type, which varies according to the disease etiology. Know these data is therefore necessary to understand the variables of the affected areas. Hence, this article compares the data available in the Brazilian government's online information systems. The database requires updating given its importance for scientific production and policy development. This is a cross-sectional study based on the SUS Informatics Department (DATASUS) and on official documents, such as the epidemiological bulletins. Objective: This study aims to analyze the epidemiological profile of confirmed cases of viral hepatitis in Brazil from 2000 to 2022, comparing regions to investigate discrepancies in the percentage of diagnosed cases. The work was carried out in the form of a descriptive ecological study with analysis of secondary data obtained from the Department of HIV/AIDS, Tuberculosis, Viral Hepatitis and Sexually Transmitted Infections, Secretariat of Health and Environmental Surveillance - Ministry of Health. Final Considerations: Analysis of the epidemiological scenario of viral hepatitis in Brazil up to 2030 reveals promising trends towards a reduction in incidence, improved early diagnosis, increased access to treatment and a reduction in complications associated with the disease.

Key-words: Hepatitis; viral infections; SUS Informatics Department.

INTRODUCTION

Viral hepatitis, such as type B and C, is a global challenge comparable to diseases such as HIV/AIDS, tuberculosis and malaria. These diseases are often neglected because their progression is slow and silent. To give you an idea, in 2015, an estimated 257 million people were living with hepatitis B and 71 million with hepatitis C worldwide, resulting in 1.34 million deaths that year (WHO, 2016).

In order to combat this issue, the World Health Assembly implemented the first Global Health Sector Strategy for Viral Hepatitis in 2016. The aim of this strategy is to eradicate these diseases as a public health problem by 2030 (WHO, 2016). To this end, Brazil plays a crucial role in this process, providing modern and free treatments through the Unified Health System (SUS). In addition, the country stands out in the area of immunization, offering the hepatitis B vaccine from birth, something that is not common in many other countries (FALADE- NWULIA et al., 2017).

The Global Strategy proposes ambitious targets, such as diagnosing 90% of infected people and treating 80% of them by 2030 (WHO, 2016). These goals are in line with the principles of the SUS, which seeks to guarantee universal, equitable and comprehensive health care. To achieve these goals, it is essential to have efficient epidemiological surveillance, which collects and analyzes data to guide prevention, diagnosis and treatment actions. Therefore, committing to the elimination of viral hepatitis as a public health problem is a measure that promotes the general well-being of the population. It is a way of ensuring that everyone has access to the necessary treatment and of preventing new infections (Epidemiological Bulletin - Viral Hepatitis 2023).

Therefore, this study aims to analyze the epidemiological profile of confirmed cases of viral hepatitis in Brazil, using data from the Notifiable Diseases Information System (Sinan). It also aims to investigate the percentage of viral hepatitis diagnoses according to the etiological agent and regional distribution in Brazil between 2000 and 2022.

Understanding these aspects is of the utmost importance for Brazilian public health. This information is crucial for strategic health policy planning, allowing authorities to direct resources more effectively, implement targeted interventions and monitor disease trends over time. By reducing regional disparities in the prevalence of viral hepatitis, it is possible to ensure more equitable access to health services and, consequently, improve the health and well-being of the population throughout the country.

OBJECTIVES

This study aims to analyze the epidemiological profile of confirmed cases of viral hepatitis in Brazil from 2000 to 2022, comparing regions to investigate discrepancies in the percentage of diagnosed cases. The analysis seeks to identify possible regional disparities in the detection and notification of viral hepatitis, suggesting areas that may need greater allocation of resources or attention in terms of public health.

METHODOLOGY

The work was carried out in the form of a descriptive ecological study with analysis of secondary data obtained from the Department of HIV/AIDS, Tuberculosis, Viral Hepatitis and Sexually Transmitted Infections, Secretariat of Health and Environmental Surveillance - Ministry of Health.

The data analyzed can be seen in the Epidemiological Bulletin

- Viral Hepatitis 2023 - Special Issue | Jul. 2023 - electronic version, which presents some specific characteristics of the Brazilian population in relation to viral hepatitis, such as the regional heterogeneity of epidemiological scenarios.

The edition of the Epidemiological Bulletin remains available on the website; (https://www.gov.br/aids/pt-br/central-de-conteudo/boletins-epidemiologicos/2023/hepatites-virais/boletim-epidemiologico-hepatites-virais_-2023.pdf/view).

RESULTS AND DISCUSSION

Between 2000 and 2022, the Notifiable Diseases Information System (SINAN) recorded a total of 750,651 confirmed cases of viral hepatitis in Brazil. Of these cases, 169,094 (22.5%) correspond to hepatitis A, 276,646 (36.9%) to hepatitis B, 298,738 (39.8%) to hepatitis C and 4,393 (0.6%) to hepatitis D (Figure 1). Therefore, in Brazil, there is a higher prevalence of confirmed cases of type C viral hepatitis, followed by types B, A and D.

Analysis of the data reveals notable trends over time in the viral hepatitis landscape. While the proportion of hepatitis A cases appears to have decreased, the incidences of hepatitis B and hepatitis C have increased significantly. These changes may reflect a number of factors, including changes in the conditions of public health conditions, hygiene practices, vaccination coverage and other variables that influence the transmission of these diseases (SANTOS et al., 2023).

On the other hand, hepatitis D seems to have a very low incidence compared to the other types of hepatitis, which suggests its less common nature or possible underreporting of these cases, since hepatitis D generally requires the presence of the hepatitis B virus (HBV) to replicate (SCARPONI et al., 2019).

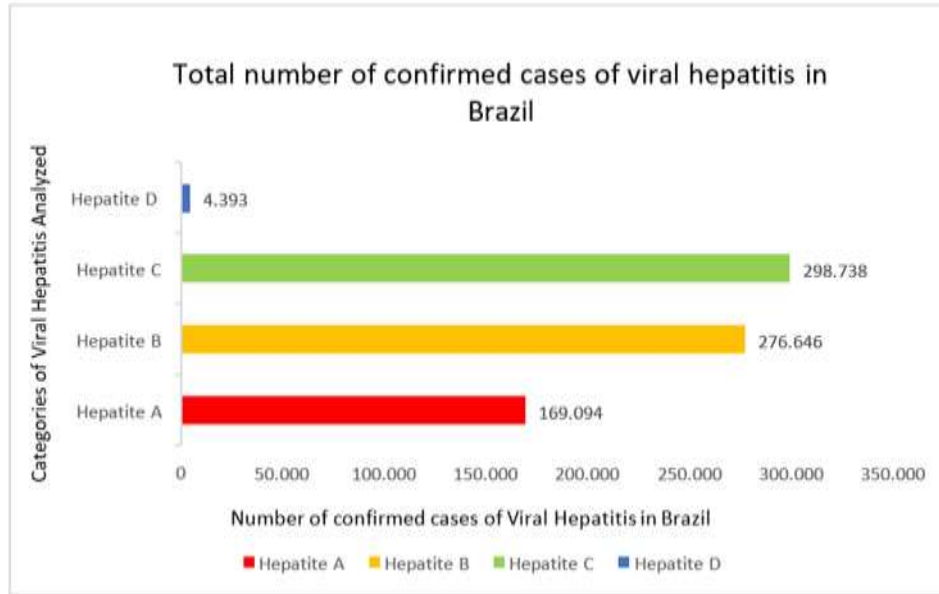


Figure 1: Total record of confirmed cases of Viral Hepatitis in Brazil between 2000 and 2022 (1,2). Source: Sinan/SVSA/MS. Notes: (1) Cases notified on Sinan up to December 31, 2022. (2) Percentages of FUs calculated in relation to the total number of cases in the regions. (3) 315 cases without information on region/FU of residence.

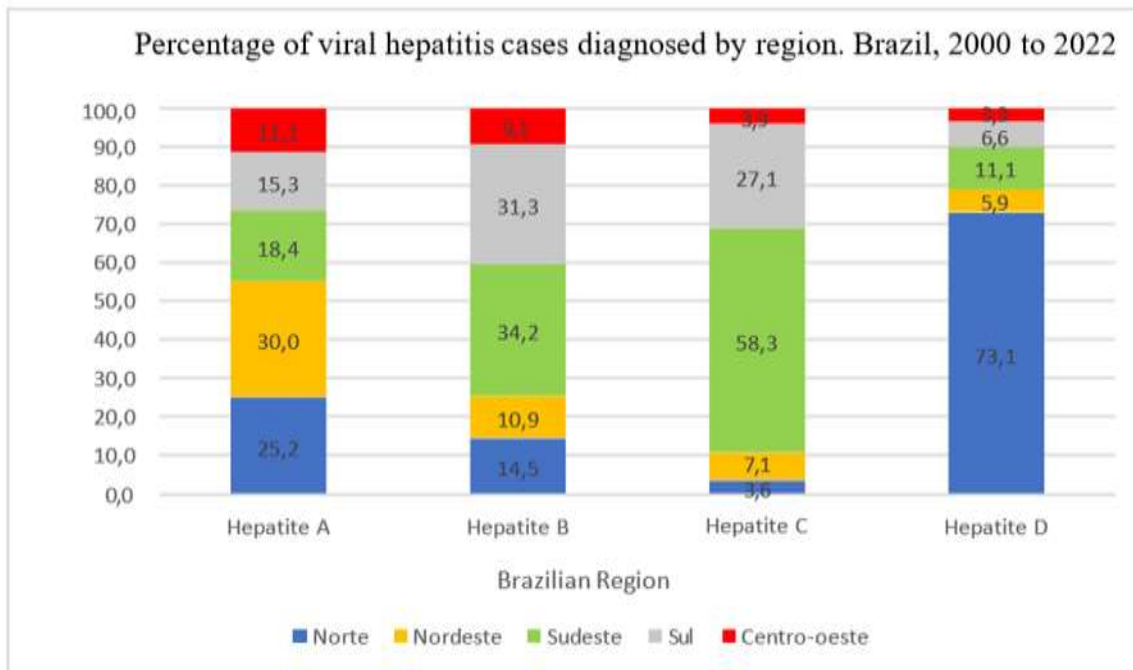


Figure 2: Percentage of viral hepatitis cases diagnosed by region. Brazil, 2000 to 2022(1,2). Source: Sinan/SVSA/MS. Notes: (1) Cases notified on SINAN up to December 31, 2022. (2) Percentages of FUs calculated in relation to the total number of cases in the regions. (3) 315 cases without information on region/FU of residence.

When analyzing the proportional distribution of viral hepatitis cases in the years 2000 to 2022, there is a variation between the five Brazilian regions in relation to hepatitis virus infection. According to the data presented in Figure 2, during the period from 2000 to 2022, the Northeast and North regions concentrated 55.2% of all confirmed cases of hepatitis A in Brazil, while the Southeast, South and Midwest regions accounted for 18.4%, 15.3% and 11.1% of cases, respectively.

This disparity is influenced by the presence of different etiological agents and reflects the unequal conditions of basic sanitation, aggravated by the lack of hygiene education measures. For example, in the northern region, access to piped water is reported in 98.44% of cities, while only 16.22% have access to sewage treatment. This discrepancy is observed even in regions with better sanitary conditions, although exposure to the hepatitis A virus (HAV) is less common (BASTOS et al., 2022).

The lack of basic sanitation, lack of sewage treatment and difficulties in accessing drinking water continue to represent major public health challenges in Brazil. These factors contribute significantly to the fecal-oral spread of these diseases, such as type A viral hepatitis (HAV), since the virus replicates in the liver, is excreted in the bile and eliminated in the feces (SOUZA; SANTOS, 2016).

After the implementation of the universal immunization programme against the hepatitis A virus (HAV) in 2014, there was a significant variation in vaccination coverage (VC) in Brazil, with rates ranging from 60.13% to 97.07%.

However, this coverage fell short of the established target and showed a generalized drop in all regions of the country from 2015 onwards.

Despite the inadequate vaccination coverage, there was a substantial reduction in the incidence of hepatitis A throughout the country over the following five years, falling from 3.29 to 0.80 cases per 100,000 inhabitants between 2014 and 2018. However, it is important to note that between 2017 and 2018, there was a slowdown in this drop in the incidence of the disease, possibly attributed to the inadequacy of the vaccination coverage percentages achieved during this period. This phenomenon seems to reflect a general trend of weakening vaccination efforts in the country, as also observed with other vaccines, such as polio and MMR (BRITO; SOUTO, 2020).

As for the distribution of hepatitis B in the different regions of Brazil, there is a significant regional variation that requires attention. The Southeast region leads the way with 34.2%, followed by the South with 31.1%, the North with 14.5%, the Northeast with 10.9% and the Midwest with 9.1%. Between 2012 and 2019, there was a 16.0% reduction in hepatitis B detection rates in Brazil, falling from 8.1 to 6.7 cases per 100,000 inhabitants, respectively. In 2022, the detection rate was 4.3 cases per 100,000 inhabitants.

Brazil thus has several differences in its epidemiological data, due to the implementation of different measures to monitor and control damage and infectious diseases (SOUZA et al., 2015).

Although there have been significant changes in the way the disease is treated and controlled over the years, with large-scale vaccination programs and screening policies in blood banks and the general population, hepatitis B remains a serious health problem, with high morbidity and mortality rates due to its high infectivity and prevalence, and can be transmitted easily in traditional populations with less urban complexity (BRASIL, 2019).

This situation may be related to the different socioeconomic realities of the Brazilian territory (BRASIL, 2017; SOUZA et al., 2015).

Since this disease has been recognized as increasing from the south to the north of the country, the Amazon region, especially Acre, southern Amazonia, Rondônia, Pará and northwestern Mato Grosso, has the highest endemicity (SOUTO, 2015).

The hepatitis C virus is more prevalent in the Southeast (58.3%), followed by the South (27.1%), Northeast (7.1%), Midwest (3.9%) and North (3.6%). This type of hepatitis is one of the main causes of chronic liver disease worldwide. The prevalence of hepatitis C virus (HCV) infection varies considerably between different geographical regions, which reflects not only epidemiological differences between populations, but also variations in the estimation methodologies used.

The main risk factors for HCV infection include transfusion of blood products from donors not screened for anti-HCV, intravenous drug use, organ transplantation, hemodialysis, mother-to-child transmission, sexual and occupational exposure. Due to the lack of a vaccine or effective post-exposure prophylaxis, prevention focuses mainly on the early identification and control of these risk factors, in order to plan primary prevention actions in any population (MARTINS; NARCISO-SCHIAVON; SCHIAVON, 2011; SHEPARD; FINELLI; ALTER, 2005).

This often asymptomatic chronic disease is often diagnosed in advanced stages, affecting vulnerable population groups with unequal access to health services that offer tests, examinations and prevention programs (OPS; 2016).

It is estimated that around 257 million people worldwide are living with chronic hepatitis B virus infection, while 71 million are unaware of being infected with the hepatitis C virus. Approximately 57% of cases of liver cirrhosis and 78% of cases of primary liver cancer are attributed to infection with these hepatotropic viruses from hepatitis B and C (PAHO/WHO; 2020), making a special focus on vulnerable populations and regions in greatest need of intervention essential.

The prevalence of hepatitis D virus infection is most significant in the North of Brazil, accounting for 73.1% of cases, followed by the Southeast (11.1%), South (6.6%), Northeast (5.9%) and Midwest (3.3%). It is caused by a defective virus that can only infect humans in the presence of the hepatitis B virus (SCARPONI et al., 2019). This condition can accelerate progression to liver failure in individuals already affected by hepatitis B.

It is a neglected disease that mainly affects developing countries (GOYAL; ROMERO-SEVERSON, 2018; SCARPONI et al., 2019).

The Amazon region is one of the areas with the highest prevalence of hepatitis B and D in the world (CICERO et al., 2016; VIANA et al., 2005). Outside the northern region of Brazil, cases are reported sporadically, and are more frequent in states bordering this region (ANTONIO FERREIRA-JUNIOR et al., 2020; NUNES et al., 2021).

Low schooling, lack of access to health services and the absence of symptoms are some of the factors that contribute to the delay in diagnosis and treatment in vulnerable populations (BRAGA et al., 2012; NUNES et al., 2021; SOUTO, 2015; VIANA et al., 2005).

Despite the regional challenges, efforts have been made to control this condition, ensuring the distribution of vaccines and medicines to the most remote communities (YAMADA et al., 2021).

In recent years, there has been a drop in the prevalence of hepatitis B throughout Brazil (PEREIRA et al., 2009; SOUTO, 2015) which suggests a possible reduction in cases of hepatitis D as well. Therefore, the analysis of notification data is crucial to understanding how hepatitis B control measures have contributed to combating hepatitis D, highlighting the importance of this data to guide effective public health policies (YAMADA et al., 2021).

In summary, in the field of human viral hepatitis, the main challenges in health surveillance actions are varied, for HAV (hepatitis A virus), socio-economic issues related to access to drinking water and sanitation, the need to improve vaccination immunization in childhood and the monitoring of transmission cases, especially among men who have sex with men, injecting drug users and contaminated food. In the case of HBV (hepatitis B virus), the challenges include the differential prevalence according to gender, the negative impact of alcohol intake and obesity on the progression of the disease, the need to monitor and prevent transmission in priority populations, the search for specific genetic markers, as well as concern about low vaccination coverage.

For HCV (hepatitis C virus), despite the high rate of Sustained Virological Response (SVR) after treatment with Direct Acting Agents (DAA), a small group of 4-5% of patients fail to eradicate the virus. It is essential to better understand the relationship with donor transplantation, the risk of hepatocellular carcinoma after treatment with DAAs and to invest in studies to develop a vaccine. In the case of HDV (hepatitis D virus), it is crucial to expand knowledge about co-infection or super-infection with HBV, explore innate immunity and invest in studies for treatment, given the complexity in managing this form of hepatitis.

Finally, for HEV (hepatitis E virus), it is necessary to recognize the importance of detection strategies in environmental and food matrices, monitor the safety of blood products and address the complications of the acute form of the disease, which have proved to be a growing challenge.

These challenges reflect the complexity and ongoing need for research and coordinated action to improve the prevention, diagnosis and treatment of viral hepatitis at a global level.

FINAL CONSIDERATIONS

Of the 750,651 confirmed cases of viral hepatitis in Brazil, the Northeast region concentrates the highest proportion of A virus infections, with 50,670 cases (30.0%).

In the Southeast, there are the highest proportions of viruses B, C and E, with 94,486, 174,250 and 814 cases (34.2%, 58.3% and 45.7%), respectively. Finally, the North region accumulated 3,211 cases (73.1%) of the total number of hepatitis D cases.

Analysis of the epidemiological scenario of viral hepatitis in Brazil up to 2030 reveals promising trends towards a reduction in incidence, improved early diagnosis, increased access to treatment and a reduction in complications associated with the disease.

Continued advances in prevention, diagnosis and treatment are expected to drive progress in the fight against viral hepatitis, with the ultimate goal of eliminating this disease as a public health problem. However, achieving this goal will require coordinated efforts and significant investments in public health, research and development, as well as the continued commitment of governments, health organizations and communities across the country.

Through joint and sustained action, it is possible to envision a future where viral hepatitis is controlled and its impact on public health is minimized.

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