Characteristic of viral hepatitis deaths in Brazil in the year 2021

Característica dos óbitos por hepatites virais no Brasil no ano de 2021

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ABSTRACT
Introduction: Viral hepatitis is an inflammatory disease of the liver caused by specific viruses. These viruses can be classified into five main types: A, B, C, D and E. Therefore, the objective was to describe the main characteristics of deaths from viral hepatitis in Brazil in the year 2021. Methods: This is an observational, cross-sectional and descriptive study, with a quantitative approach and using secondary data, through DATASUS, from the SIM. Results: The data provided present information on the characteristics of deaths from viral hepatitis in Brazil, including age range, sex, color/race, education and marital status of people who died due to this disease, number of deaths from viral hepatitis in each region of Brazil and number of deaths from viral hepatitis in Brazil, grouped by type of hepatitis. Discussion: In the year 2021 were notified to the Mortality Information System of Brazil 1,712 deaths by viral hepatitis. As for the characteristics of these deaths, the variables with the highest incidence can be defined as: age 60 to 79 years (823 deaths), male gender (1,078 deaths), white race (865 deaths), education from 8 to 11 years (450 deaths), married (580), southern region and chronic viral hepatitis. Conclusion: Given the relevance to this

issue, early diagnosis, treatment and popular education in health is of fundamental importance, aiming at strategies to reduce morbidity, mortality and survival of its carriers.

Keywords: Mortality, Brazil, Viral Hepatitis.

1 INTRODUCTION

Viral hepatitis is an inflammatory disease of the liver caused by specific viruses. These viruses can be classified into five main types: A, B, C, D, and E. The pathology of viral hepatitis varies according to the type of virus and may be acute or chronic (WHO, 2023). Hepatitis A, for example, is an acute disease that usually does not cause permanent damage to the liver, while hepatitis C is a chronic disease that can lead to irreversible liver damage such as cirrhosis and liver cancer (INCA, 2023).

According to the WHO, hepatitis B is the most common form of viral hepatitis worldwide, accounting for about 30% of cases. Hepatitis C, on the other hand, accounts for about 27% of cases and is considered one of the main causes of cirrhosis and liver cancer worldwide. Hepatitis A, although less common, is responsible for occasional outbreaks in different parts of the world, especially in areas with poor sanitation and hygiene conditions (LAVANCHY, 2004).

Viral hepatitis is a major public health problem worldwide. It is estimated that around 325 million people are living with hepatitis B or C worldwide, which represents a major burden on the global healthcare system. In addition, viral hepatitis is responsible for a large number of deaths each year, and is one of the leading causes of cirrhosis and liver cancer worldwide (DEBES, 2013).

The distribution of viral hepatitis throughout the world varies according to the geographical region and level of development of each country. According to the World Health Organization (WHO), viral hepatitis is most common in Asia and Africa, where poor sanitation and lack of access to vaccination are risk factors for disease transmission. In included countries, such as the United States and Europe, viral hepatitis is more common among injection drug users and people who received blood transfusions before the 1990s, when tests to detect the virus were less accurate (WHO, 2017).

In Brazil, the Ministry of Health estimates that about 1.5 million people live with hepatitis C and 1.7 million people live with hepatitis B (BRASIL, 2021). In addition, Brazil is one of the countries with the highest incidence of hepatitis A in Latin America. Hepatitis A is an acute infectious disease that usually does not cause permanent damage to the liver, but can lead to complications in severe cases (WHO, 2026).

The study of viral hepatitis is extremely important, not only from a clinical point of view, but also from an epidemiological and public policy perspective. It is essential to know the distribution of viral hepatitis in order to plan effective prevention and treatment actions. Moreover, it is important to understand the pathology of viral hepatitis in order to develop increasingly effective therapies.

In summary, viral hepatitis represents a major challenge to public health worldwide, especially in low- and middle-income countries. However, with effective prevention and treatment actions, it is possible to reduce the incidence and mortality of these diseases. Therefore, it is essential to invest in research and public policies aimed at fighting viral hepatitis.

Thus, this study was carried out with the objective of describing the main characteristics of deaths from viral hepatitis in Brazil in 2021 based on preliminary data from the mortality information system (SIM) available at Datasus, and thus contribute to future research on this subject, with more robust methodologies.

2 BACKGROUND

The knowledge of the characteristics about the deaths from viral hepatitis allows the direction of health actions with emphasis on epidemiology to base health actions on prevention, promotion, control of incidence, prevalence, morbidity and mortality rates, and the quality of life of its patients.

3 METHODS

3.1 STUDY DESIGNS

This is an observational, cross-sectional and descriptive study, with a quantitative approach and using secondary data. Its purpose is to survey all deaths from viral hepatitis that occurred in Brazil in 2021.

3.2 STUDY POPULATION AND SITE

The data collected on the profile of deaths from viral hepatitis refer to Brazil. This is located in the American continent, with a total area of 8,516,000 km², five regions, 26 states and one federal district, 5,570 municipalities, and a resident population of 214.3 million, according to the 2021 IBGE estimate.

The system responsible for obtaining the data corresponds to the Mortality Information System. Therefore, it has a large database.

3.3 DATA COLLECTION

The information was collected in the database of the Department of Informatics of the Unified Health System (DATASUS), of the Ministry of Health, from the SIM, which uses the DEATH DECLARATION (DO) as the basic and essential document for mortality data collection in Brazil.

The SIM was computerized in 1979. Twelve years later, with the implementation of SUS and under the premise of decentralization, data collection was transferred to the states and municipalities, through their respective Health Secretariats. With the purpose of gathering quantitative and qualitative data on deaths in Brazil, the SIM is considered an important management tool in the health area, subsidizing decision making in several areas of health care. At the federal level, its management is assigned to the Health Surveillance Secretariat. And from this, Datasus processes these data, obtaining the services provided and forming the database.

3.4 INCLUSION CRITERIA

For this study, data were selected from the SIM database available at DATASUS in preliminary data for the year 2021, general mortality, corresponding to ICD-10 codes B15 (Acute hepatitis A), B16 (Acute hepatitis B), B17(Other acute viral hepatitis), B18 (Chronic viral hepatitis) and B19 (Unspecified viral hepatitis).

3.5 VARIABLES

For this study we investigated the main characteristics of deaths from viral hepatitis in Brazil from the description in the variables age group, sex, color/race, education, marital status, region of residence, and types of viral hepatitis.

3.6 DATA ANALYSIS METHODOLOGIES

The data were obtained from the Datasus/SIM database through the Tabnet program and then collected into Microsoft Office Excel 2019 spreadsheet. For data analysis, the causes of deaths with ICD-10 were identified, in the period 2021. The type of statistical analysis used corresponds to the measure of proportion. To obtain this proportion, the number of deaths by diseases (ICD-10) divided by the total cases by diseases in the same period was put, multiplying by 100. To analyze the proportional mortality by region of residence, we proceeded differently, obtaining the total number of deaths from viral hepatitis in the year 2021 in the specific region divided by the total number of inhabitants in the same region, multiplying the result by 100,000 inhabitants.

Microsoft Office Excel 2019 program was used to analyze the data and then the data were presented by means of tables, figures and described in the text.

3.7 ETHICAL CONSIDERATIONS

The data used for this study are available in an official government platform, public and unidentified, thus, according to resolution 466/2012 CNS there is no need to be approved by a research ethics committee, however, we ensure all the ethical precepts involving research with human beings provided in resolutions 466/2012 and 510/2016, according to the standards of CONEP/CNS (National Committee for Ethics in Research / National Health Council).

4 RESULTS

The data provided present information about the characteristics of viral hepatitis deaths in Brazil, including age range, sex, color/race, education, and marital status of the people who died from this disease (table 1).

Regarding the age range, it is observed that most deaths occurred in people over 40 years of age, representing about 93% of cases. The age groups with the highest number of deaths were those aged 40 to 59 years and 60 to 79 years, with 35.8% and 48.1% of the deaths, respectively.

As for gender, the data show that viral hepatitis affects men more than women, accounting for 63% and 37% of deaths, respectively.

Regarding color/race, most deaths occurred in white people (50.5%), followed by brown (36.4%), black (9.2%), yellow (0.8%), and indigenous (0.6%) people. In addition, in 2.6% of the cases the color/race was ignored.

With regard to education, the deaths were more frequent in people with low education levels, with 49.7% of the deaths occurring in people with up to 3 years of schooling. On the other hand, only 7.8% of the deaths occurred in people with 12 years or more of schooling.

Finally, regarding marital status, the data show that most deaths occurred in single people (30.7%) and married people (33.9%), followed by widows (13.2%) and legally separated people (9.5%). In 7.9% of the cases the marital status was ignored.

These data can be useful to direct viral hepatitis prevention and treatment strategies in Brazil, since they show the population groups most affected by the disease.

Tabela 1. Característica dos óbitos por hepatites virais no Brasil no ano de 2021.

Caracterrísticas	N	%
Faixa Etária (em anos)		
>= 9	9	0,5
10 a 19	14	0,8
20 a 39	96	5,6
40 a 59	613	35,8
60 a 79	823	48,1
>= 80	157	9,2
Sexo		
Masculino	1.078	63,0
Feminino	634	37,0
Cor/ Raça		
Branca	865	50,5
Preta	157	9,2
Amarela	13	0,8
Parda	623	36,4
Indígena	10	0,6
Ignorado	44	2,6
Escolaridade (em anos)		
Nenhuma	126	7,4
1 a 3	322	18,8
4 a 7	402	23,5
8 a 11	450	26,3
>=12	133	7,8
Ignorado	279	16,3
Estado Civil		
Solteiro	525	30,7
Casado	580	33,9
Viúvo	226	13,2
Separado judicialmente	163	9,5
Outro	82	4,8
Ignorado	136	7,9

Fonte: MS/SVS/CGIAE - Sistema de Informações sobre Mortalidade - SIM

In figure 1. data show the number of deaths from viral hepatitis in each region of Brazil, as well as the proportional mortality rate from viral hepatitis per 100,000 inhabitants.

Observing the numbers, the Southeast region presents the highest absolute number of deaths from viral hepatitis, with 800 registered cases. However, when it comes to the proportional mortality rate by viral hepatitis per 100,000 inhabitants, it is the South region that stands out with a rate of 1.11.

On the other hand, the North region presents the lowest number of deaths from viral hepatitis, with 187 cases, and the lowest mortality rate for viral hepatitis per 100,000 inhabitants, with 1.00. The Northeast region, on the other hand, despite having a relatively high number of deaths (275), has the lowest proportional mortality rate for viral hepatitis per 100,000 inhabitants, with only 0.47.

It is important to note that although the Southeast region has the highest absolute number of deaths from viral hepatitis, its proportional mortality rate from viral hepatitis per 100,000 population is relatively low (0.90) compared to other regions, such as the South (1, 11) and Midwest (0.67).

These data highlight the importance of looking at the viral hepatitis mortality rate per 100,000 inhabitants rather than the absolute number of deaths when assessing the prevalence of viral hepatitis in different regions of Brazil.

Figure 1 - Proportional mortality per 100,000 inhabitants for viral hepatitis, by region of residence, in Brazil, in the year 2021
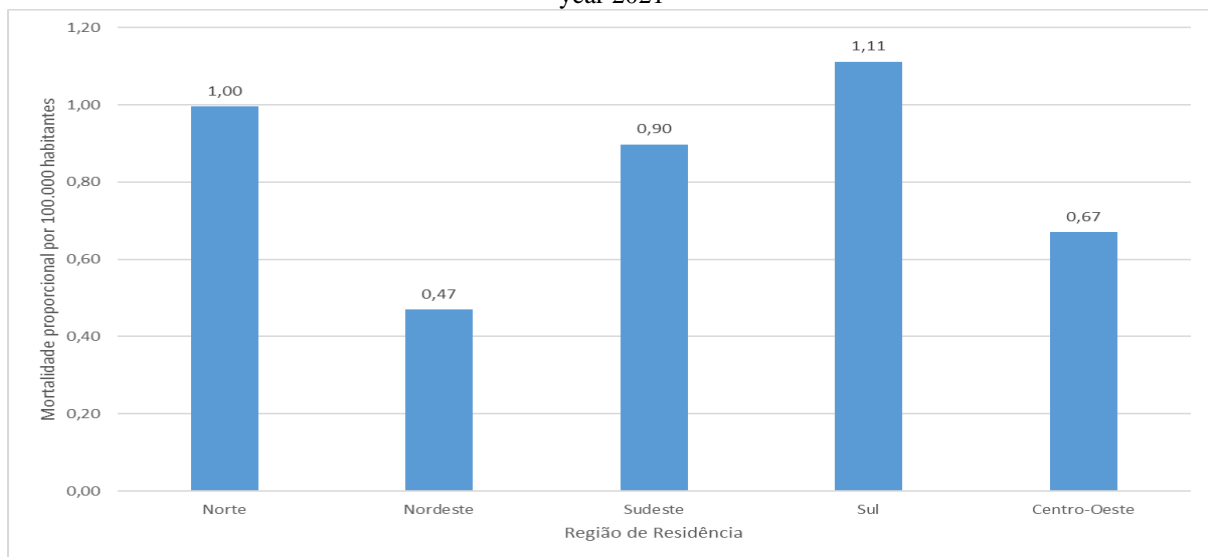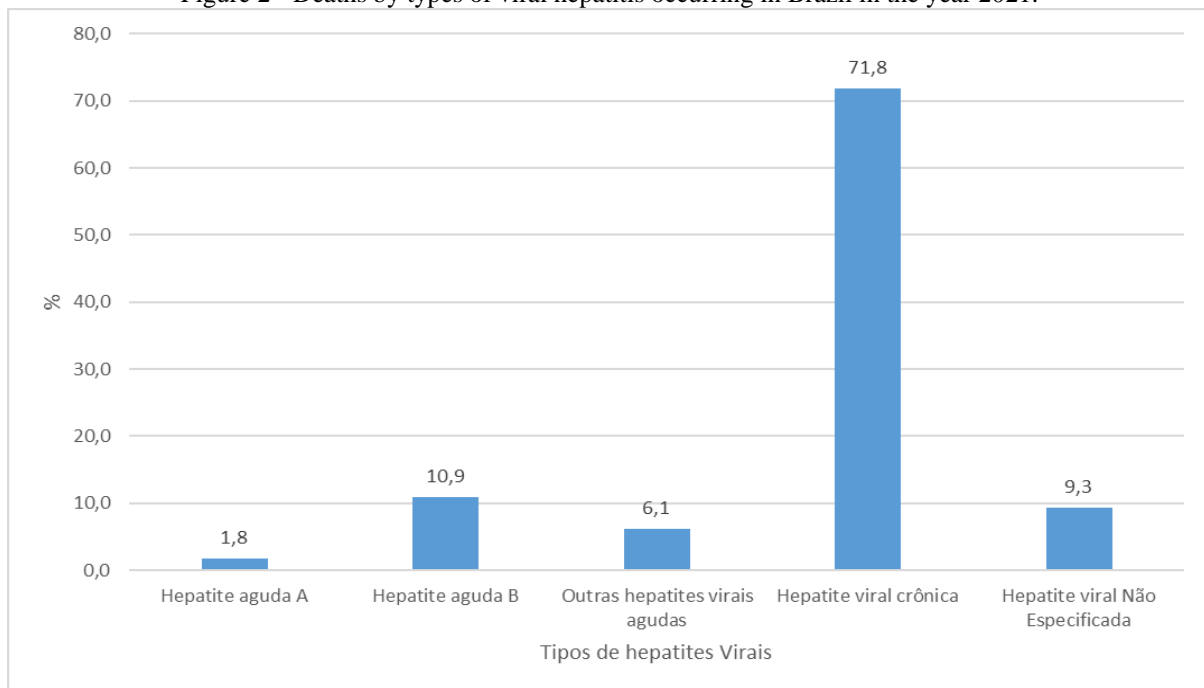

Source: MS/SVS/CGIAE - Mortality Information System - SIM

In figure 2, the data presented refer to the number of deaths from viral hepatitis in Brazil, grouped by type of hepatitis.

It is observed that most deaths (71.79%) occurred due to chronic viral hepatitis, while acute hepatitis (A and B) accounted for 12.73% of deaths. Acute hepatitis B was the type of hepatitis that caused the most deaths, accounting for 10.92% of the total. Other acute viral hepatitis, which does not include A and B, accounted for 6.13% of the deaths. Finally, unspecified viral hepatitis caused 9.35% of the deaths.

These results demonstrated the importance of prevention and treatment measures for viral hepatitis, especially regarding chronic viral hepatitis, which was the main cause of deaths. Vaccination against hepatitis A and B can be an effective strategy to prevent the disease. In addition, it is important that people are made aware of the importance of getting tested to detect the disease early and seek proper treatment, which can reduce the number of deaths from viral hepatitis in the country.

Figure 2 - Deaths by types of viral hepatitis occurring in Brazil in the year 2021.

Source: MS/SVS/CGIAE - Mortality Information System - SIM

5 DISCUSSION

In 2021, 1,712 deaths from viral hepatitis were notified to the Brazilian Mortality Information System. These data presented on deaths from viral hepatitis in Brazil are worrisome, but they are not unique to the country. Throughout the world, viral hepatitis is an important cause of morbidity and mortality, especially in low- and middle-income countries. According to the World Health Organization (WHO), about 325 million people are living with hepatitis B or C worldwide (WHO, 2023).

Comparing the data from Brazil with other countries, one can see some differences and similarities. For example, in China, hepatitis B is the leading cause of liver disease and liver cancer, accounting for more than 30% of liver cancer deaths in the country. In sub-Saharan Africa, on the other hand, hepatitis C is a major cause of morbidity and mortality, accounting for 90% of chronic hepatitis cases in the region (SCHWEITZER, 2015; ZHANG, 2018).

In Europe and the United States, viral hepatitis is a major public health concern, although the incidence and mortality rates are lower than in low- and middle-income countries. In Europe, hepatitis C is the leading cause of cirrhosis and liver cancer, while in the United States, hepatitis C is the leading cause of chronic liver disease and liver transplantation (STANAWAY, 2016).

One of the main differences between countries is the availability of resources and measures for prevention and treatment. The more included countries generally have more resources to invest in vaccination, screening, and treatment programs, which can significantly reduce mortality and death from viral hepatitis. However, even in countries that received, they were left with the highest risk of infection and the least access to healthcare (NAYAGAM, 2016).

In summary, the data on deaths from viral hepatitis in Brazil highlight the importance of prevention and treatment measures, which are relevant not only to the country but to the whole world. Vaccination, screening, and treatment programs should be implemented in all countries, especially those with higher rates of viral hepatitis and limited resources. Raising public awareness of the importance of prevention and early detection is also key to reducing the morbidity and mortality associated with viral hepatitis.

The data on deaths from viral hepatitis in Brazil by region show a trend toward higher mortality from viral hepatitis in the South and North regions, with 1.11 and 1.00 deaths per 100,000 inhabitants, respectively, compared to the other regions of the country. The Northeast region presented the lowest mortality rate for viral hepatitis, with 0.47 deaths per 100,000 inhabitants.

These data are worrisome, as they indicate that regions with higher viral hepatitis mortality may be facing additional challenges in disease control and prevention that deserve special attention from health authorities. However, it is important to note that the viral hepatitis mortality rate in Brazil is relatively low compared to other developing countries, such as India, where the viral hepatitis mortality rate is 22.6 per 100,000 population (SCHWEITZER et al., 2015).

The reasons for regional differences in the number of viral hepatitis deaths in Brazil may be diverse and complex, including social, psychological, and health factors. For example, the Northern region of Brazil has the highest incidence of chronic hepatitis B, while the Northeast region has the lowest incidence, which may influence regional differences in the death rate (ZHANG et al., 2018). In addition, the availability of health services and access to effective treatments may also be factors that induced regional variation in viral hepatitis mortality.

Overall, these data emphasize the importance of viral hepatitis prevention and control measures, such as vaccination, testing, treatment, and public awareness, to reduce the number of viral hepatitis deaths in Brazil. Moreover, these measures must be tailored to meet the specific

needs of each region of the country, with a holistic and collaborative approach involving health authorities, health professionals, and the community at large.

The data on deaths from viral hepatitis in Brazil according to the characteristics of the deaths provide important information about the groups most at risk for the disease and the factors associated with higher mortality.

Regarding the age range, most deaths occurred in people aged 40 years or older, representing about 84% of total deaths. This may be related to the fact that hepatitis B and C have a prolonged incubation period, often taking decades to manifest and consequently increasing the chance of developing cirrhosis and other complications in older people. In addition, most people with chronic viral hepatitis have no symptoms, which can lead to a late diagnosis and an increased risk of death (FIGUEIREDO-MENDES, 2018; FERREIRA, 2019).

Regarding sex, there was a predominance of deaths in men, representing about 63% of the total. This difference may be related to a greater exposure of men to risk factors, such as the use of injectable drugs, which increase the risk of transmission of hepatitis B and C. In addition, studies suggest that men are more prone to develop liver cirrhosis, which increases the risk of death (DE BOER, 2014).

Regarding color/race, deaths were more common in white (50.5%) and brown (36.4%) individuals. This difference may be related to socioeconomic factors and access to health care, which can influence the exposure to risks and early diagnosis of the disease (BRASIL, 2021).

As for education, most deaths occurred in people with low educational level, representing about 50% of deaths. This result may be related to a greater difficulty in access to information and prevention of the disease, as well as a lower capacity to seek proper treatment (ALMEIDA, 2011).

Finally, regarding marital status, most deaths occurred in single and married individuals, representing about 64% of total deaths. These results suggest that marital status is not an important factor in viral hepatitis mortality in Brazil (SILVA, 2014).

In comparison with other countries, the distribution of deaths from viral hepatitis in Brazil by characteristics such as age group, sex, color/race, education, and marital status is similar to that of other low- and middle-income countries, where hepatitis B and C are more prevalent. However, there are variations in relation to high-income countries, where the prevalence of the disease is lower and deaths are more associated with specific groups, such as injecting drug users and users with advanced liver disease.

In conclusion, the data of deaths from viral hepatitis in Brazil according to the characteristics of these deaths reinforce the importance of early identification of the disease and

access to adequate treatment. It is necessary to invest in public policies aimed at the prevention and control of viral hepatitis.

6 CONCLUSION

Viral hepatitis is a public health problem with repercussions in Brazil and in the world. In the last 21 years, viral hepatitis has affected more than 680 thousand Brazilians. The notification of this disease is compulsory and the outcome of this disease causes around 1.4 million deaths annually around the world (MINISTRY OF HEALTH).

In 2021, 1,712 deaths from viral hepatitis were notified to the Brazilian Mortality Information System. As for the characteristics of these deaths, the variables with the highest incidence can be defined as: age group 60 to 79 years (823 deaths), male gender (1,078 deaths), white race (865 deaths), education from 8 to 11 years (450 deaths), married marital status (580), southern region and chronic viral hepatitis.

Given the relevance to this issue, it is of fundamental importance the early diagnosis, treatment and popular education in health, aiming at strategies for reducing morbidity, mortality and survival of its carriers. As a goal to face this disease, the WHO in 2016 designated that Brazil in the next 9 years reduce infections by 90% and mortality by 65% by 2030 (WHO; CAPARROZ 2021; BRAZIL 2022).

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