

# ANALYSIS OF THE REGIONS WITH THE HIGHEST PREVALENCE OF HEPATITIS B AND C IN ANÁPOLIS AND PROPOSALS FOR IMPROVING PUBLIC HEALTH

Letícia Faria Déroulède<sup>1</sup>

Jalsi Tacon Arruda<sup>2</sup>

Luciana Vieira Queiroz Labre<sup>3</sup>

Evangelical University of Goiás – UniEVANGÉLICA<sup>123</sup>

## ABSTRACT

Viral hepatitis B and C are the most epidemiologically relevant subtypes in Brazil, with high morbidity and mortality rates due to their clinical characteristics and complications. The overall objective of this study is to describe the regions of Anápolis with the highest incidence of these types of hepatitis, provide data to improve public health and to develop an educational booklet. This study is quantitative, descriptive, observational, and cross-sectional, using secondary data from the Municipal Health Department, referring to the Viral Hepatitis Notification Unit in the municipality. The research included the analysis of medical records of patients with hepatitis B and C registered at the reference unit between 2019 and 2024. A prevalence of hepatitis B cases was found in the neighborhoods of the Central region of the city (n=25), Jundiá (n=16), and Bairro de Lourdes (n=12), while hepatitis C cases were more prevalent in the Central region (n=17) and Maracanã (n=14). It was suggested that a specific code be created for each neighborhood, as well as a booklet with relevant information about these types of hepatitis, to be made available to the population. It was concluded that there were a greater number of cases in the central region of Anápolis; however, the study had limitations in terms of a more in-depth analysis of these data.

**Keywords:** Epidemiology; Hepatitis B; Hepatitis C.

## INTRODUCTION

Viral hepatitis is an important public health problem due to its high prevalence and broad clinical and prognostic spectrum. Viral hepatitis is caused by numerous hepatotropic etiological agents, with hepatitis B and C viruses being the subtypes of greatest epidemiological relevance. Hepatitis B virus (HBV) is a DNA virus of the *Hepadnaviridae* family, and hepatitis C virus (HCV) is an RNA virus of the *Flaviviridae* family. Both are transmitted parenterally, sexually, and vertically. HBV has a stable structure, which has enabled the creation of an effective vaccine currently used in global vaccination programs, while HCV, being a virus with great genetic variability, has not yet allowed the development of a vaccine against HCV. (FERREIRA; SILVEIRA, 2004; DA SILVA *et al.*, 2012; VIANA *et al.*, 2017; BORGES *et al.*, 2022).

As for epidemiology in Brazil, it is estimated that there are almost 2 million chronic HBV carriers. In recent years, with the implementation of the vaccination program, the incidence of HBV has been declining in the country. Regarding HCV, in

Brazil, there are an estimated 3 million hepatitis C carriers; however, as many oligosymptomatic cases are not identified and treated, there is a state of underreporting. In Goiás, between 2013 and 2017, 5,607 cases of hepatitis B were reported, with hepatitis B being the most prevalent serotype, while 1,713 cases of hepatitis C were reported, with frequencies still underestimated (DA SILVA *et al.*, 2012; VIANA *et al.*, 2017; PEREIRA, 2018; BARBOSA; FERRAZ, 2019; GRANDI; LOPEZ; BURATTINI, 2022).

Both are diagnosed through laboratory tests using viral antigens and their antibodies, as well as HBV serum DNA testing and HCV RNA detection through polymerase chain reaction (DA SILVA *et al.*, 2012; VIANA *et al.*, 2017; PEREIRA, 2018). Treatment for both is based on symptomatic therapy, periodic screening for cirrhosis and hepatocellular carcinoma, identification of high viral loads, and the use of viral replication inhibitors (VIANA *et al.*, 2017).

Considering that Brazil has high morbidity and mortality rates from HBV and HCV infections, associated with low scientific production and scarce regional epidemiological surveys on the subject, hepatitis B and C can be considered relevant public health problems and, moreover, conditions neglected by the health service (NELSON *et al.*, 2011; KOCOGLU *et al.*, 2018; GRANDI; LOPEZ; BURATTINI, 2022). Given the scenario presented, this study aims to describe the epidemiological data of the municipality of Anápolis, Goiás, regarding HBV and HCV infection (hepatitis B and C).

## **METHODS**

This is a quantitative, descriptive, observational, and cross-sectional study with secondary data from the Municipal Health Secretariat of Anápolis, Goiás, referring to the Notification Unit for viral hepatitis in the municipality, made available through Official Letter No. 121/2024 – SEMUSA/DIVIG/GEEPI. This study included information on the municipality's health regions, available in the hepatitis B and C notification forms registered from 2019 to the first half of 2024, with a sample including individuals of all age groups and both sexes, without any distinction of race, color, education, or sexual orientation. The research was submitted to and approved by the Research Ethics

Committee under CAAE 79490824.0.0000.5076, with opinion number 6,891,891 on July 14, 2024. The main purpose of the study is to describe current data on the occurrence of hepatitis B and C in the city of Anápolis-Goiás, provide data for the improvement of health programs and policies in the municipality, as well as the development of an educational booklet on these diseases.

## RESULTS

Based on data collected by the Municipal Health Secretariat of Anápolis on the regions where these types of hepatitis occurred in the municipality from 2019 to the first half of 2024, a higher number of HBV cases were found in the Central region (n=25), Jundiaí (n=16), and Bairro de Lourdes (n=12). The Jaiara neighborhood had 9 cases, the JK Nova Capital and Polocentro I neighborhoods had 8 cases, and São José and Vila Formosa had 7 cases. In relation to HCV, a higher number of cases were found in this period in the Central region (n=17) and Jaiara (n=14). The Parque dos Pirineus, Santa Isabel, and Maracanã regions had 4 cases each. The other neighborhoods, for both diseases, had between 1 and 3 cases during the end of the period. There was also a higher incidence of hepatitis B than hepatitis C.

Furthermore, a major problem encountered when analyzing the neighborhoods was the divergence in the naming of each region (examples: Cidade Universitária and Cidade “universitari”; Gibran El Hajj and Jibrán El Hadj), which interfered with a more in-depth and detailed analysis of the topic. Therefore, for greater reliability and standardization of data when filling out the notification form, the creation of a specific code (e.g., Adriana Parque - 24.001; Alto da Bela Vista - 24.002, etc.) for each neighborhood would be of great value for future research and for better municipal health management in relation to hepatitis B and C in Anápolis.

Given this scenario, an educational booklet was developed containing information on transmission, signs and symptoms, diagnosis, prevention methods, and other relevant information on hepatitis B and C, available via *QR code* ( ) (Figure 1), to be made available in PDF format at health centers, schools, the Municipal Health Department, and other public places, mainly in the regions of Anápolis most affected

by the disease. This will enable the population to learn more about viral hepatitis and, above all, to be aware of how to prevent it.

**Figure 1.** QR code - Educational booklet on hepatitis B and C.



Source: Author.

## **CONCLUSION**

It was concluded that, based on data from the Municipal Health Department of Anápolis, there was a higher number of cases of both hepatitis B and hepatitis C in the Central region of the city. In addition, the creation of a specific code for each neighborhood was suggested in order to provide greater standardization of data, avoiding spelling and naming errors in these regions. The main purpose of the educational booklet is to disseminate basic and necessary information that the entire population should know about these diseases, since hepatitis B and C are important public health problems in the country.

The main limitation was that the available data was subject to errors in the standardization of the notification forms, especially in the health regions, which was the main difficulty in the study and statistical analysis of the data, thus justifying the creation of a specific code. Thus, it was not possible to establish the incidence and prevalence rates of these types of hepatitis in Anápolis. In addition, as the collection of data for 2024 was restricted to the first half of the year, there is a possibility of bias in the interpretation of the total number of cases in each health region.

However, the results found are validated by the literature, and the study is of great value for providing updated epidemiological information for the municipality, allowing new health strategies to be outlined in line with the sociodemographic profile of hepatitis B and C in Anápolis.

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